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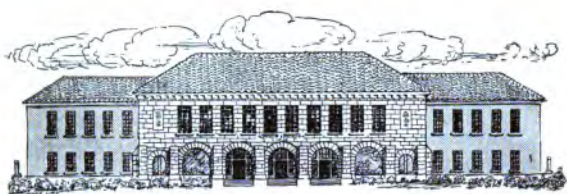
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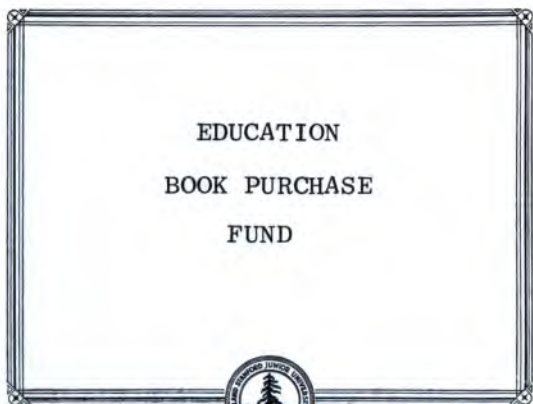
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INDUSTRIAL EDUCATION



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# Industrial Education

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Consisting of an Investigation and Report by a Competent Special Committee; Reports of Officers and Committees; Action of A. F. of L. Convention; the Attitude of Organized Labor and Others Toward the Problem;  
a Glossary of Definitions, etc.;  
Labor's Bill for Congressional Enactment.



PUBLISHED BY

**American Federation of Labor**

801-809 G STREET NORTHWEST

WASHINGTON, D. C.

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FIRST EDITION, 1910

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## FOREWORD

Of the great educational work which the American Federation of Labor has done during the past quarter of a century, the public in general has no conception. Mere statistics are wholly inadequate to convey the value of what has been accomplished.

The American Federation of Labor has received special acknowledgment and appreciation for data furnished in response to the ever-increasing requests from educators, statisticians, students, National and State legislators, and others engaged in the study of sociological problems.

It is confidently expected that the next decade will witness further great developments in the application of a sound system of education. The line of progressive industrial education must be constructive. Any system to be of value must also necessarily be one of growth. The adoption of a scheme of education must train up a far more capable and comprehensive body of citizens by emphasizing their position in society as producers, consumers and as men. A general educational policy which will greatly ease the strain of demoralization which so sadly affects the children of the poor. It ought, by giving vocational training, alongside of cultural training, advance them more at the age of sixteen than now obtains at eighteen.

Assuming, then, that the social stratification in America is vertical, the problem is to find the highest elevation which any youth's ability will permit him to reach, and to get him to that elevation.

Apropos of this problem, the size of which is the length and breadth of America, and because of the interdependence of industrial effort, the American Federation of Labor has undertaken a comprehensive study helpful toward its solution. The progress made and reports issued have already had a salutary effect upon educators, employers, the press, and the public in general. Economic considerations plead for the creation and multiplication of opportunities for industrial and technical education, and to the attainment of those laudable purposes this pamphlet is dedicated.





# INDUSTRIAL EDUCATION

## PRESIDENT GOMPERS REPORT

In his report to the Convention of the American Federation of Labor, held in Toronto, Canada, November, 1909, President Gompers said under the caption "Industrial Education:—"

The American labor movement is in line with, and has given expression to, the best thought for the education of all the people in all the elements of learning. It is especially interested in the further education of the wage-workers of America, industrially. At several conventions the American Federation of Labor has gone on record upon these subjects, and at Denver last year the following resolution was adopted:

*"Resolved, That the President, in conjunction with the Executive Council of the American Federation of Labor be, and is hereby authorized to appoint a special committee of at least fifteen, to be composed of a majority of trade union members of this convention, who will serve without compensation and incur no expenses other than necessary and legitimate expenditure within the judgment of the President and Executive Council, to investigate the methods and means of industrial education in this country and abroad, and to report its findings, conclusions, and recommendations to the next annual meeting of the American Federation of Labor."*

In accordance with this instruction the Executive Council with me endeavored to constitute a committee, but there was some difficulty in accomplishing that result by correspondence. Later, and during my absence from the country, the committee was completed, detailed report of which will be communicated to you in the report of the Executive Council.

Two meetings of the Committee on Industrial Education have been held; one in New York City during the summer, the other at Washington, D. C., last month. The latter I was privileged to attend. Prior to my departure the Executive Council directed that I make an effort to learn some of the present conditions of industrial education in European countries as well as the position which organized labor there takes toward the subject. With the important duties devolving upon me while abroad, there was little time to make a careful study of the systems in vogue, but the best that has been said and printed upon the subject has been gathered in printed form. Nowhere in all the countries that I visited has there been an expression of organized labor other than in full endorsement of the best methods to educate the workers industrially as well as along lines of the arts and sciences; and thus there is the universal declaration of the organized workers upon this great question.

It may not be uninteresting here to call attention to the ignorant, reckless and vindictive hostility which the Post-Van Cleave-Parry-Kirby National Association of Manufacturers has manifested toward the American labor movement. When our conventions declared in favor of industrial education, and particularly since the authorization at Denver for the creation of a special committee to pursue the study of the problem and to report, the most malignant misrepresentations of our purposes and aspersions upon our character were the utterances of these men who, judging us from their own narrow standpoint, charged us with perverting the purpose of industrial education. Our own work in this and other fields of activity, the results achieved and yet to be achieved, must and will stand as our best answer.

The American labor movement appreciates the fact that experience has shown that education, industrially, is but one phase of the growing recognition of labor's rights, and that in this respect it is closely related to all the general work of the trade union movement, the movement which has since its inception stood for constantly increasing better opportunities, better factory and labor conditions, better home life, and the protection of the young and the innocent children from exploitation.

Organized labor has always been and is now deeply concerned with the well-

being of the human family and all the influences that go to make for the advancement of the industrial workers. In our principles and purposes are comprised the fullest scope of human activity. Labor has always manifested its humane interest in the welfare of children; it realizes that industrial education has the same purpose and aims—that is, to secure co-operation of all human agencies which make for the betterment of mankind.

Industrial education, the raising of the age limit of child workers, and compulsory school attendance are necessarily a part of the one great beneficial scheme. Organized labor has always stood for, and has been the pioneer in, the demand for free schools, free text-books, compulsory education in the elementary grades and for the fullest and freest opportunity in all lines of learning, technology included.

The subject of education, industrially, concerns not only the wage-earners themselves, but every inhabitant of the nation. It is, therefore, necessary and eminently proper that it be administered by the same authority and agency which administers our public school systems and such other institutions as are concerned in the public welfare.

Already reference has been made to the false position in which some elements of employers would place our movement upon this subject. All we ask of fair-minded men is a comparison of the utterances of our opponents with our own. We contend that education in America must be free, democratic, conducted by, of, and for the people, and that it must never be consigned to, or permitted to remain in, the power of private interests where there is sure to be the danger of exploitation for private profit and wilful rapacity. Under the pretense of industrial education private agencies for personal profit have perverted the term, resulting in a narrow and specialized training, to the detriment of the pupils, the workers, and people generally.

Modern methods of manufacturing, with their division and subdivision and specialization, have, to a large extent, rendered nearly superfluous and therefore largely eliminated the all-around skilled worker. Some so-called modern apprenticeship systems are narrow, producing a line of trained "specialists." It has been well said that specialists in industry are vastly different from specialists in the professions. In the professions specialists develop from the knowledge of all the elements of the science of the profession. Specialists in industry are those who know but one part of a trade and absolutely nothing of any other part of it. In the professions specialists are possessed of all the learning in their professions; in industry the specialists are bereft and denied the opportunity of learning the commonest elementary rudiments of industry other than the same infinitesimal part performed by them perhaps thousands of times over each day.

Our movement in advocating industrial education protests most emphatically against the elimination from our public school system of any line of learning now taught. Education, technically or industrially, must be supplementary to and in connection with our modern school system. That for which our movement stands will tend to make better workers of our future citizens, better citizens of our future workers.

### EXECUTIVE COUNCIL'S REPORT

During the second day of the Toronto Convention the Executive Council, in its report, made reference to industrial education and its action in relation to the resolution adopted by the Denver Convention, and reported as follows:

In accordance with the resolution adopted by the Denver Convention, which comprehended the appointment of a special committee on industrial education, we beg to submit the following report:

A special committee on Industrial Education was appointed to consider the subject matter therein contained. The resolution creating the special commission reads as follows:

"That the President, in conjunction with the Executive Council of the American Federation of Labor be, and is hereby authorized to appoint a special committee of at least fifteen, to be composed of a majority of trade union members of this convention, who will serve without compensation and incur no expenses other than necessary and legitimate expenditure within the judgment of the President and Executive Council, to investigate the methods and means of industrial educa-

tion in this country and abroad, and to report its findings, conclusions and recommendations to the next annual meeting of the American Federation of Labor."

In accordance with its provisions there were appointed as members of the committee the following:

John Mitchell, chairman; headquarters, Civic Federation, 10096 Metropolitan Building, New York City.

John Golden, President Textile Workers, Box 742, Fall River, Mass.

James Wilson, President Pattern Makers' League, 403 Neave Building, Cincinnati, Ohio.

Miss Agnes Nestor, Secretary Glove Workers' International Union, Room 506, Bush Temple of Music, Chicago, Ill.

Mrs. Raymond Robins, National Woman's Trade Union League, 372 West Ohio street, Chicago, Ill.

John B. Lennon, Bloomington, Ill.

Charles P. Neill, Commissioner Bureau of Labor, Washington, D. C.

W. B. Wilson, Congressman, House of Representatives, Washington, D. C.

Frank Duffy, Brotherhood of Carpenters, Box 187, Indianapolis, Ind.

Hugh Frayne, Sheet Metal Workers, 1711 Summit avenue, Scranton, Pa.

James O'Connell, Machinist, Executive Board, care Room 405, McGill Building, Washington, D. C.

Charles H. Winslow, Mass. Com. of Industrial Education, Arlington, Mass.

Edward Hirsch, Editor, North and Baltimore streets, Baltimore, Md.

James Roach, Iron Moulder, Albany, N. Y.

Rev. Charles Stelzle, Department Church and Labor, Room 700, 156 Fifth avenue, New York City.

Stuart Reid, General Organizer A. F. of L., Lynn, Mass.

By unanimous request at its first meeting:

Samuel Gompers, President of the American Federation of Labor, Washington, D. C.;

James Duncan, First Vice-President of the American Federation of Labor, Quincy, Mass., and

Frank Morrison, Secretary of the American Federation of Labor, Washington, D. C., were elected to serve as members of the committee.

The initial meeting of the committee was held in New York on August 21, and continued during the following day. The two days' sessions served for the purpose of considering and deciding upon the policy to be pursued. At these meetings information was received by the various members, from its chairman and others, who were requested to appear before them, and with the information imparted, together with an exchange of views, considerable progress was made.

The second meeting was held in Washington, D. C., October 22-23. The committee early realized the necessity of going directly to those for information who had made a study of the subject, and with this point in view extended invitations to some of the foremost educators, business men and publicists, as well as others, to appear before them, and as a result much valuable information was placed at the disposal of the committee. The following is a list of the persons invited to appear before the committee:

W. B. Prescott, International Typographical Union, Commission on Supplemental Trade Education.

Charles R. Richards, Originator of the National Society for the Promotion of Industrial Education.

Leslie W. Miller, Principal, Pennsylvania Museum and School of Arts.

Dr. Herman Schneider, Dean of the University of Cincinnati.

John M. Shrigley, President Williamson Free School for Mechanical Trades.

A. Lincoln Filene, of William Filene's Sons Company, Boston, Mass.

Paul H. Hanus, Professor of Education, Harvard University.

Frederick P. Fish, President Massachusetts State Board of Education.

Dr. Andrew S. Draper, Commissioner of Education of the State of New York.

Arthur D. Dean, Chief, Division of Trade Schools, New York Education Department.

C. W. Cross, Superintendent of Apprentices, New York Central Lines.

Miss Ella M. Haas, District Inspector, Department of Inspection of Workshops and Factories of the State of Ohio.

Charles R. Towson, Secretary, Industrial Department, the International Committee of Young Men's Christian Associations.

J. C. Monaghan, Secretary National Society for the Promotion of Industrial Education.

Frank A. Vanderlip, President National City Bank, of New York.

Dr. Alexander C. Humphreys, President Stevens Institute of Technology.

Mr. V. Everitt Macy, of New York.

Dr. Henry S. Pritchett, President of the Carnegie Foundation.

Dr. Elmer E. Brown, Chief, Bureau of Education, Department of the Interior.

Mr. C. W. Burket, Editor American Agriculturist.

T. J. Foster, International Correspondence School, Scranton, or representative.

Raymond Robins, Chicago.

The net results of this meeting clearly indicated that our committee was pursuing a practical policy in its investigations, and that much valuable data and information were obtained. That there was much confusion in the public mind concerning industrial education was manifest. The committee conceived it imperative that honest differences of opinion be considered and pointed out, and that an effort be made to help solve this great problem.

Organized labor favors that plan of industrial training that will give our boys and girls such a training as will help them to advance after they are in the industry.

Organized labor believes that there are pressing educational needs which can be at least partially solved by the introduction of industrial training; it is aware that boys and girls do not always have the opportunity to enter the field of employment which will best contribute to their development either physically, morally or intellectually. Those who leave school change from one unskilled occupation to another, and gain but little or nothing in efficiency. Labor believes that industrial education between the ages of 14 and 16 years ought to awaken in these children a new school interest, and so help retain them in school longer and contribute more to their development; it believes that if such industrial training took the children between the ages of 14 and 16, when they are of little value in a business way, at a time when the education they have received is of advantage so far as it goes, but hardly fits them for actual working places, that it would serve to give them the proper training to prepare and enter some branch of actual vocational work.

We believe that as much attention should be given to the proper education of those who are at work in our industries as is now given to those who prepare to enter professional and managerial careers, simply to balance justice and make it necessary to give to the wage-earning classes and the common industries such equivalent as we can for what the present schools are doing for the wealthier classes, as well as for the professional and managing vocations.

The personal observations and first-hand information obtained here and in European countries which embrace the general plan of industrial education in the various countries; details of schools at present in operation, both as regards the courses of study and the administration and financing; the views of some of the foremost authorities in industrial education, and the attitude of both employer and organized labor toward the instruction provided by numerous schools operated by means of State, local and municipal subsidies, and by private funds, have all been collated.

That the impressions made by our individual and joint study were profound is not saying too much, and the magnitude of the problem did not lessen. In considering the subject of the present status of industrial education it seems necessary to emphasize the need of a thorough and intense study of the future effect on American industries and the efficiency of the American workers, and the full realization of their prosperity, and it is deemed expedient that this question be given the broadest and fullest consideration and discussion by this convention.

The report of the special committee on industrial education will be submitted to you in printed form. As that report itself shows, it is not sufficiently exhaustive, thorough and comprehensive to warrant final action, yet it is confidently believed that it is an accurate statement of fact and the best that could be ascertained and presented within so brief a time as the committee had at its disposal.

We recommend that the committee be continued for at least another year; that they co-operate with the Executive Council and all other bodies having for their purpose extending public industrial education.

## REPORT OF SPECIAL COMMITTEE ON INDUSTRIAL EDUCATION

Delegate Mitchell, chairman of the committee, read the following report:

The special committee appointed by authority of the Denver Convention of the American Federation of Labor, to consider, investigate, and inquire into the question of industrial education at home and abroad, and report in detail to the Toronto Convention of the American Federation of Labor in 1909, together with whatever recommendations, suggestions, instructions and requests it considered necessary in order to place this all-important and vital matter clearly, broadly and intelligently before the wage-workers of the country and the public in general, begs leave to report that the committee held three meetings during the year, as follows:

The first in New York City, August 20 and 21, the second in Washington, D. C., October 22 and 23, and the third in Toronto, Canada, November 9. Much information and data bearing on the subject matter of industrial education in all its phases was received and very thoroughly discussed, debated and considered. The committee found the question of education, whether cultural, industrial, academic, or otherwise, so intensely interesting and vitally important that we have arrived at the conclusion that to report in full to this convention would not be advisable, owing to the fact that our investigations have not been completed, and that we are yet awaiting information asked for from some of the most prominent business men of America, as well as from educators and others whom the committee thought might be able to give valuable data gathered from actual experience.

### REQUIREMENTS OF THE RESOLUTION

From the terms of the resolution under which the committee was constituted, it is evident that what was desired was:

First. A thorough investigation of the needs of industrial education;

Second. A statement of the extent to which needs are met by existing institutions; and

Third. As a result of such investigations, some definite suggestions for the promotion of industrial education in such manner as might best serve *the interests* of the whole people.

The committee has entered on its duties without fixed notions as to the form which industrial education should take throughout the country, and its investigations so far have made a profound impression upon its members.

### DEMAND FOR INDUSTRIAL EDUCATION

The importance of our subject can not be too highly estimated. The general demand for industrial knowledge and skill, and the almost universal interest in the subject manifested by business organizations, boards of trade, labor organizations, as well as by educators and public men, is sufficient proof that the right kind of education for a boy or girl who expects to enter upon a vocational career is second only in importance to their having an education at all.

We must never lose sight of the fact that a large majority of the working people are poor, and because of this they are forced to begin the battle of life at an early age. The need of the day is that something be done for the children of this great wage-working class.

Formerly the apprenticeship system offered the boy an opportunity to learn a trade and become a thoroughly trained mechanic, but of late years the scheme of specialization has supplanted the old apprenticeship system, even to extreme specialization. It *ought* to be recognized as a scientific truth that the higher the skill possessed by the mechanic the more valuable is his labor, both to himself, his employer and the community. The more efficient labor becomes the higher wages it should command.

The one trouble in America to-day is that too many of our youths who have graduated from the grammar or high school are misfits industrially. If we are to secure industrial supremacy, or even maintain our present standards in the industrial world, we must in some way in our educational system acquire an equivalent to our old apprenticeship system.

## INDUSTRIAL EDUCATION. APPRENTICESHIP SYSTEM

It is of more than passing interest to note that a revival of apprenticeships by large corporate interests through comprehensive and sane regulations are gradually taking form.

With the growing feeling that the old-time apprenticeship system must be modified to meet modern conditions of life there looms up the question of a substitute which shall keep the best and most necessary of the older customs and meet modern requirements.

It is generally conceded by those interested in industrial education that the industrial school, *per se*, does not and can not result in turning out a full-fledged, skilled mechanic ready to take up his trade.

It is further recognized that the old apprenticeship system possessed many features that were uneconomic and unjust, but with the preservation of much that was good and its application by proper blending with the modern idea of perfection in theory, it would lead to more satisfactory results.

A marked tendency toward apprenticeships is taking place, and the feeling expressed by both employer and employed is that a gradual return will take place if such training is conducted sanely and advantageously to the American youth.

In order to bring out practical suggestions towards a solution of the problem the committee addressed themselves to the following questions:

1. Should trade, vocational, technical and industrial schools be established as a part of the public school system?
2. Should private industrial educational institutions be tolerated?
3. Under what conditions and terms should industrial schools, either public or private, be countenanced and supported?
4. Under what conditions should semi-private or semi-public industrial schools, namely, the so-called "co-operative industrial schools," be approved or disapproved?
5. Should they be free, supported by the city, county or State in which they are located?
6. Should they be under the control or partial control of the national government?
7. And should their instructors or teachers be practical men from the ranks of trade occupations, or should they be men who know nothing of the trade itself except its theoretical side?
8. What should be taught under the head of "Industrial Education?"—the cultural side, the professional side, the mechanical side, the business side, or all combined?
9. To what extent, if any, should labor headquarters, labor temples, and labor halls be used to favor industrial education?

Believing that progress could best be promoted by a close study of the prevailing systems now in vogue, and that some way should be provided so that the maximum of information should be obtained at the minimum cost of time and expense, the committee decided that invitations should be extended to a group of the foremost exponents of industrial education to meet with them in Washington October 23 and 24 for the purpose of conferring and explaining the merits of the several types of industrial education, and accordingly the following persons were extended invitations:

- W. B. Prescott, I. T. U., Commission on Supplemental Education.
- Charles R. Richards, Originator of the National Society for the Promotion of Industrial Education.
- Leslie W. Miller, Principal Pennsylvania Museum and School of Arts.
- Dr. Herman Schneider, Dean of the University of Cincinnati.
- John M. Shrigley, President Williamson Free School for Mechanical Trades.
- A. Lincoln Filene, of William Filene's Sons Company, Boston.
- Paul H. Hanus, Professor of Education, Harvard University.
- Frederick P. Fish, Chairman Massachusetts State Board of Education.
- Dr. Andrew S. Draper, Commissioner of Education of the State of New York.
- Arthur D. Dean, Chief, Division of Trade Schools, New York Educational Department.
- C. W. Cross, Superintendent of Apprentices, New York Central Lines.
- Miss Ella M. Haas, District Inspector, Department of Inspection of Work-shops and Factories of the State of Ohio.



Charles R. Towson, Secretary Industrial Department of the International Committee of Young Men's Christian Associations.

J. C. Monaghan, Secretary National Society for the Promotion of Industrial Education.

Frank A. Vanderlip, President National City Bank, of New York.

Dr. Alexander C. Humphreys, President Stevens Institute of Technology.

Mr. V. Everitt Macy, of New York.

Dr. Henry S. Pritchett, President of the Carnegie Foundation.

Dr. Elmer E. Brown, Chief, Bureau of Education, Department of the Interior.

Mr. C. W. Burket, Editor American Agriculturist.

Mr. T. J. Foster, International Correspondence School, Scranton, or representative.

Mr. Raymond Robins, Chicago, Ill.

Naturally the result of this meeting, which occupied the greater portion of two days, with one evening session, was illuminating and instructive, and served to show the keen interest and alertness of labor representatives.

The object of the several systems of education was kept steadily in view throughout the entire conference, and the description of the leading types, showing their aims, objects and methods of instruction, made a profound impression upon the members of the committee.

There was a remarkable unanimity of opinion on important points in regard to industrial education and the numerous demands for technical training for those who have completed a compulsory school attendance period and who desire to take up an industrial vocation at a later time.

It also served to show that the much-heralded apathy and disinterestedness charged by our critics to the trades unions is more imaginary than real, and that organized labor was fairly abreast of the situation.

To the ladies and gentlemen who, at the sacrifice of valuable time from their business, co-operated with the committee in its investigations, the committee feels deeply grateful and appreciates the gratuitous services rendered in the abundant information and assistance given, and sympathizes with the universal thought expressed that the conference marked another epoch in the history of the trades union movement for industrial education.

Subsequent discussion seemed to indicate that the champions of one system as against another might learn much from the different viewpoints, and that there was common ground for all on which to base the future development of a sound system of industrial education, free from the dangers which trade unions' representatives pointed out.

#### **PUBLIC VS. PRIVATE CONTROL OF PUBLIC INSTRUCTION**

The committee feels that there is justification in condemning any system of public instruction privately controlled, or any scheme of private selection of pupils, and calls attention to the introduction of a plan which is being put into operation in several localities and fostered by manufacturers' associations.

#### **"THE CO-OPERATIVE INDUSTRIAL EDUCATION PLAN"**

It is a limited plan for industrial education, carried on between the high school, which engages a teacher for the purpose, one satisfactory to the manufacturers, and a group of the latter who indenture such boys as they desire to have. The idea is, of course, to give a thorough training. *But,*

a. The manufacturer is not obliged to take any boys, or to keep any boy.

On the other hand, the high school is obliged to educate all duly qualified boys, to give them all that the city provides.

Therefore, those who study in the co-operative course do so on sufferance.

b. The people have no hand in this plan. No matter how much a father may desire such training for the boy, the city is helpless to do anything, as under this plan the veto power over the boy's right to public industrial education is in the hands of the manufacturer.

c. The public school must be neutral as to trade unionism. Surely it dare not be hostile. But what is there to restrain one or all the co-operating plants from assuming any attitude, however hostile? They have the right to teach and to foster anti-unionism with school-apprenticed boys under them.

d. A boy who should talk over or agitate for union principles can be instantly

deprived of his educational future under this plan; and if his father should be a known union champion only the good nature of the manufacturer can prevent reprisal in the form of dropping the boy from this course.

e. The teacher can not help siding with the manufacturers; he can not protest, should he so wish, if they import scabs, strike-breakers or any sworn foes of unions. It is not for the school to say who shall be the fellow-workmen of these young student-apprentices. If he be a man of principles, he could not take the boys out of such a shop, for they are under bond.

f. Finally, with a teacher too soft on the side of the manufacturers, we shall see, for the first time in a public school system, a spirit new in evil power—a class of schoolboys trained under a *thoroughly un-American* system of *private selection of pupils*, based on no public or competitive method, unless the manufacturers so permit;

A system wholly removed from the salutary supervision of the people.

A system which needs no check in prejudicing the favorites of this system against the large excluded class of their schoolfellows, and later, against their fellow-workmen themselves.

Any scheme of education which depends for its carrying-out on a private group, subject to no public control, leaves unsolved the fundamental democratic problem of giving the boys of the country an equal opportunity and the citizens the power to criticise and reform their educational machinery.

The trend toward the introduction of schemes of industrial education and apprenticeships at public, as well as private expense, which pretends to teach trades in periods ranging from four months to four years, and turn out graduates in times of industrial peace who are able to earn only 50 per cent of the established wage in a given trade, and in times of industrial dispute are exploited in the interests of unfair employers, is worthy only of condemnation.

#### LEGISLATION

Results vast in importance and magnitude have come from the action of Congress, in 1862, in giving land grants to each State, to be used for a State college of agriculture and mechanic arts. This appropriation of lands, followed by direct appropriation of money in 1890 and 1907, provides these colleges with a fund averaging about \$65,000 per State, or a total of over \$3,000,000 annually. While this fund was for a long time used largely for general studies, the subjects of mechanical arts, agriculture and home economics were finally developed, so that they now compete on nearly equal terms with the literary and scientific courses. Since most of this fund is in demand to train engineers, technical agriculturists and teachers in the mechanical, agricultural and home economic subjects, comparatively little is available to give school training to those who wish to become expert workmen, farmers or home-makers.

The title of the Land Grant Act of 1862 provided for "colleges for the benefit of agriculture and the mechanic arts." Each State was required to "inviolably" appropriate the accruing interest and earnings from this gift to the "endowment, support and maintenance of at least one college, *where the leading object shall be, without excluding other scientific and classical subjects, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts*, in such sequence as the legislatures of States may respectively prescribe, in order to promote the liberal and practical education of industrial classes in the several pursuits and professions of life."

Though the law was plainly designed for the betterment of that 90 per cent who are in vocations where the labor is done with the hands, these schools, as most other schools, too often were conducted mainly to assist those who were seeking an avenue out of the manual side of the mechanical trades, agriculture and home-making into the so-called professions. The research departments connected with these colleges and with other scientific and engineering schools and departments have now accumulated a vast body of knowledge useful to the workman. Much of this information has been arranged in text-books and in courses for practical work in the school shops, in the commercial shops, on the farms, or in the home.

Gratified with the developments of the State colleges of agriculture and mechanic arts, Congress has been ever ready to meet requests to further build up these institutions. And there is a movement, with a large following in Congress,

to still further develop the education to which these colleges were dedicated. Since only one college in a State can do little more for our greatly enlarged population than to provide courses of study for those who are to become technicians, and can not give equal opportunity in liberal and practical education to all of the industrial classes, this new movement has crystallized around a plan for including the secondary public schools along with the State colleges of agriculture and mechanic arts, thus creating and giving direction to a complete national scheme of education, in which labor shall receive recognition and its just share of attention.

#### ORGANIZED LABOR'S POSITION

Organized labor's position regarding the injustices of narrow and prescribed training in selected trades, by both private and public instruction, and the flooding of the labor market with half-trained mechanics for the purposes of exploitation, is perfectly tenable, and the well-founded belief in the viciousness of such practices, and consequent condemnation, is well-nigh unassailable.

Organized labor's record for years in regard to better sanitary conditions in factories and workshops, and its continued efforts toward safeguarding women and minors, have been the subject of wide discussion and much helpful legislation.

Its advocacy of free schools, free text-books, and the raising of compulsory school age have been religiously adhered to, and closely allied to these subjects is that of industrial education, and any serious discussion of the proper kind of vocational training promotes discussion of the former.

There is a strong reaction coming in general methods of education, and that growing feeling, which is gaining rapidly in strength, that the human element must be recognized, and can not be so disregarded as to make the future workers mere automatic machines.

Experience has shown that manual training school teachers without actual trade experience do not and can not successfully solve this great problem, and that progress will necessarily be slow, as new teachers must be provided, a new set of text-books will have to be written, and the subjects taught in a sympathetic and systematic manner.

In the last analysis, it is of greater moment to those engaged in industry whether this question should be discussed freely and fairly than it is to mere theorists, who advocate industrial education without having any definite plan or purpose (other than a selfish one), in their advocacy of the same, and it is believed that a unification rather than a multiplication of effort is needed in order to help solve this immense problem.

#### CONCLUSIONS

It is believed that the future welfare of America largely depends on the industrial training of our workers and in *protecting* them.

The inquiries of the committee seem to indicate that if the American workman is to maintain the high standard of efficiency, the boys and girls of the country must have an opportunity to acquire educated hands and brains, such as may enable them to earn a living in a *self-selected* vocation and acquire an intelligent understanding of the duties of good citizenship.

No better investment can be made by taxpayers than to give every youth an opportunity to secure such an education. Such an opportunity is not now within the reach of the great majority of the children of the wage-workers. The present system is inadequate and unsatisfactory. Only a small fraction of the children who enter the lower grades continue through the grades until they complete the high school course. The reasons which seem to be the prime causes for withdrawal are first, a lack of interest on the part of the pupils; and secondly, on the part of the parents, and a dissatisfaction that the schools do not offer instruction of a more practical character. The pupils become tired of the work they have in hand and see nothing more inviting in the grades ahead. They are conscious of powers, passions and tastes which the school does not recognize. They long to grasp things with their own hands and test the strength of materials and the magnitude of forces.

Owing to past methods and influences, false views and absurd notions possess the minds of too many of our youths, which cause them to shun work at the trades and to seek the office or store as much more genteel and fitting. This silly notion has been shaken by the healthy influence of unions, and will be entirely eradicated

if industrial training becomes a part of our school system, and in consequence of this system of training he will advance greatly in general intelligence, as well as in technical skill and in mental and moral worth, he will be a better citizen and a better man, and will be more valuable to society and to the country.

### RECOMMENDATIONS

*Supplemental Technical Education.*—The importance of this kind of school, for those who have already entered the trades, has been a matter for serious consideration by the committee.

The demand for such instruction is measured by the necessity for training in particular trades and industries, and the chief aim of such instruction should be to present those principles of arts and sciences which bear upon the trades and industries, either directly or indirectly.

The economic need and value of technical training is not to be disregarded, and cognizance should be taken of the fact that throughout the civilized world evening and part-time day technical schools enroll twenty pupils to every one who attends the other types of vocational schools.

The committee submits for consideration and discussion to the convention the proposition that there be established, at public expense, technical schools for the purpose of giving supplemental education to those who have entered the trades as apprentices.

We further recommend—

1. The continuance of progressive development of supplemental trade education, as inaugurated by trade unions, and call special attention to the work undertaken by the International Typographical Union in the establishment of a school for the higher education of its members.

It is a practical application to a trade union of a necessity that exists, and admitted.

It is administered by *printer-tutors* who have never been afflicted with *pedagogical cramp*, and never expect to be; is within the reach of every man within the industry, and has succeeded in developing the latent talents and of widening the sphere of usefulness among its students, and ought to appeal to every ambitious printer.

A significant fact in connection with this school is that educators, as well as others of wide experience, believe that, for the adaptation to an end, this school has no equal. It also marks a new era in education, and one of its chief assets, other than the education of its students, is that public and private interests are emulating its example.

While other trade unions are engaged in activities of a like nature, though expressed in various forms, for the sake of brevity elaborate descriptions are omitted.

It is worthy of mention; however, that large sums of money are annually expended by trade unions for education, through the channels of official journals, and in some instances its members are being trained for the teaching profession, while the preparation of text-books is another undertaking to be commended.

The committee further recommends that all trade unions which have not adopted a system of technical education give the matter the consideration it so richly deserves; and we further believe that the present undertakings of the unions call for the most enthusiastic admiration, and are entitled to the most cordial and loyal support.

Following is a list of organizations who have undertaken an extension of education for their members:

International Typographical Union, Electrotypers and Stereotypers, International Photo-Engravers of North America, Printing Pressmen and Assistants' Union, International Granite Cutters, International Horseshoers' Union, Pattern Makers' League of North America, and the Carpenters of Chicago and Cook County.

*Technical Industrial Education.*—

2. We favor the establishment of schools in connection with the public school system, at which pupils between the ages of fourteen and sixteen may be taught the principles of the trades, not necessarily in separate buildings, but in separate schools adapted to this particular education, and by competent and trained teachers.

The course of instruction in such a school should be English, mathematics,

physics, chemistry, elementary mechanics, and drawing.\* The shop instruction for particular trades, and for each trade represented, the drawing, mathematics, mechanics, physical and biological science applicable to the trade, the history of that trade, and a sound system of economics, including and emphasizing the philosophy of collective bargaining. This will serve to prepare the pupil for more advanced subjects, and in addition to disclose his capacity for a specific vocation.

In order to keep such schools in close touch with the trades there should be local advisory boards, including representatives of the industries, employers and organized labor.

3. The committee recommends that any technical education of the workers in trade and industry being a public necessity, it should not be a private but a public function, conducted by the public and the expense involved at public cost.

4. We recommend the continuance of the life of the committee and final report to the 1910 convention.

5. That the convention requests the United States Department of Commerce and Labor to investigate the entire subject of industrial education in this country and abroad.

6. To request the committee to co-operate with the Department of Commerce and Labor in said investigation.

7. To request the Executive Council of the A. F. of L. to act with said committee ex-officio.

8. To request the officers of all organizations affiliated with the American Federation of Labor to supply us with all information they may have relative to industrial education as soon as possible, for the purpose of getting an up-to-date report with up-to-date methods of how industrial education should be taught, conducted and promoted.

Appended to this report is a brief prepared for the use of the committee, which purposes to show, with reasonable brevity, just what is being done, and what has been begun in the recent past in regard to industrial education, including the problem; what has been done in foreign countries, methods of accomplishment in this country, showing systems and types of systems; that which is being accomplished by philanthropy and private interests; also that which is being done by the Federal Government, together with the State laws on the subject, and the attitude of employers and organized labor.

JOHN MITCHELL, Chairman;  
SAMUEL GOMPERS,  
JAMES DUNCAN,  
JOHN B. LENNON,  
DR. CHARLES P. NEILL,  
EDWARD HIRSCH,  
FRANK MORRISON,  
JAMES WILSON,  
HON. W. B. WILSON,  
REV. CHARLES STELZLE,  
HUGH FRAYNE,  
FRANK DUFFY,  
JOHN GOLDEN,  
MARGARET DREIER ROBINS,  
AGNES NESTOR,  
JAMES ROACH,  
JAS. O'CONNELL,  
STUART REID,  
CHARLES H. WINSLOW,

President Gompers announced that the report of the Special Committee would be referred to the Committee on Education.

President Gompers' report, the Executive Council's report, and the Special Committee's report on Industrial Education was referred to the Committee on Education.

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\* See Definitions, page 17.

**REPORT OF COMMITTEE ON EDUCATION**

Delegate Savage, secretary of the committee, read the following report:

*To the Officers and Delegates of the Twenty-ninth Annual Convention of the American Federation of Labor:*

We, your Committee on Education, beg leave to report as follows:

First. We have carefully examined the report of the special committee appointed by authority of the Denver Convention on industrial education. We heartily endorse the action of this committee and fully concur in all the recommendations contained in the report, and congratulate the committee on the clear and concise manner in which they have covered the many matters that enter into a question of so much importance to the working people and the public in general as the question of industrial education is at this time.

We especially recommend that this committee be continued, as suggested in the report, to make a final report to the 1910 convention. We also recommend legislation along the lines indicated in the report.

We also deem it advisable, on account of the great importance of the question, that delegates, in reporting to their constituents the work of this convention, make special mention of this matter, and that the Secretary of the American Federation of Labor be instructed to have a sufficient number of copies of this report printed to be distributed among the organizations affiliated with the American Federation of Labor, upon application.

JOS. F. VALENTINE, Chairman;  
G. W. SAVAGE, Secretary;  
VICTOR A. OLANDER,  
EDWARD B. GOLTRA,  
JAS. J. FREEL,  
WM. J. TRACY,  
P. F. RICHARDSON,  
MISS SADIE SPRAGGON,  
JNO. T. BUTLER,  
ERNEST BOHM,  
SAMUEL BOTTERILL,  
HUGO MILLER,  
FRANK BUTTERWORTH,  
THOS P. MENTON,  
C. W. FEAR.

On motion, the report of the committee was adopted as read.

# DEFINITIONS AND EXPLANATIONS

## AN OUTLINE FOR A TENTATIVE COURSE OF STUDIES IN A SPECIFIC GROUP OF TRADES

### DEFINITIONS

*Science* is classified knowledge.

All our knowledge concerning changes which result in the alteration of appearance, position, or state of bodies is classified under the head *Physics*.

Illustration—1. The pulverizing of plate glass shows change in appearance; so also does wheat ground into flour. 2. Water may be ice, water or steam, thus showing change of state or form.

All our knowledge concerning changes which result in the formation of new substances is classified under the head *Chemistry*.

Illustration—The burning of kerosene oil, illuminating gas, or wood gives new substances.

*Physics* and *Chemistry* treat of the laws of matter and energy.

*Physics* is the science of mechanics, heat, sound, light, magnetism and electricity.

*Chemistry* treats of matter and energy in their simplest forms, and the various combinations of these simplest forms.

It is essential at the beginning of a course in the study of science underlying the trades to understand accurately the meaning of the words fact, law, theory, and hypothesis.

### SUMMARY

*Facts* are discovered by direct observations and experiments.

*Laws* are statements of facts.

*Theories* are statements of supposed causes of facts.

*Hypotheses* are guesses concerning the cause of some fact or set of facts.

## SPECIFIC APPLICATION OF TERMS USED IN THE REPORT OF SPECIAL COMMITTEE

*English*—The instruction in English should be such as will give the pupil a taste for good reading and to acquaint him with and to make intelligent use of the literature which will be helpful to him as a citizen and an industrial worker. It should prepare him to state in direct and clear language the necessities and problems which arise in his social, civic and industrial life. It should prepare him to understand clearly and to make comprehensible statements embracing the technicalities of his industrial work.

*Mathematics*—The instruction in mathematics should cover those fundamental principles of mathematics which underlie the practical calculations of the civic, economic and industrial life of the worker. Problems and illustrations applying these principles should be drawn from practical life.

*Physics*—The instruction in physics should embrace the basic principles of natural philosophy, with illustrations drawn from familiar surroundings.

*Chemistry*—The instruction in chemistry should be such as will make the pupil familiar with the more common chemical elements and chemical changes.

*Mechanics*—The instruction in mechanics should embrace the general mechanical principles involved in the action of forces as applied almost universally daily in practical life.

*Drawing*—The instruction in drawing should embrace both free-hand and mechanical drawing. In free-hand drawing the pupils should be taught to make outline sketches of simple objects which shall show the general appearance of the objects as regards form and shape and the approximate relative dimensions so



that when the dimensions by measurement are given a lucid finished drawing can be made by means of the sketch. The instruction in mechanical drawing should embrace the use of drawing instruments and accessories, and the preparation of fairly creditable finished drawings on the basis of the sketches and measurements made by the pupil. Practice in the reading of drawings and blue-prints should form an important part of this instruction.

**Shop Instruction**—Instruction should be given in shop practice for specific trades. In connection with this instruction should be given the following subjects pertaining to these trades: Drawing and design to the extent of making appropriate and lucid sketches and a reading of finished drawings and specifications. Mathematics as used in the actual shop practice, both by journeyman worker and foreman. The mechanical principles involved in the tools, apparatus and appliance and the operations of the trade; science which shall explain and account for materials and changes due to the operations of the trade.

**Civics and History**—The history of trades in general and of the development of particular trades. Civics and history necessary for the development and promotion of good citizenship. The elements of the subjects of civics and economics as applied to the industrial and commercial phases of the history of the United States.

**Economics**—Economics which shall develop well informed and thinking individuals regarding the broader economic questions and those arising in specific trades. This should include the philosophy of collective bargaining and the relations of the employers and the employed to industry; trade bookkeeping, including stock taking and prices.

The rights of labor to organize.

The right of workmen in association to set the scale for the sale of their labor power in a joint bargain with employers.

The rights of contractual relations between employer and employed.

Emphasis of value of minimum rate of wages.

Value of analysis of statistics as applied to economics.

Value of organization; in production, in distribution, in the dissemination of economic truths and in all other progressive efforts.

A comprehensive study of the main factors in the production of wealth, i. e. land, labor, capital.

Arbitration voluntarily entered into and voluntarily enforced as against compulsory arbitration, compulsorily entered into and compulsorily enforced.

## TENTATIVE SUGGESTIONS FOR PRACTICAL INSTRUCTION IN SPECIFIC TRADES, INCLUDING CARPENTRY, PATTERN MAKING, WOOD WORKING, AND MACHINE SHOP PRACTICE

### CARPENTRY

**Practical**—Names, use and handling of various tools, and their care, as they are required for use (this includes the bench, planes, chisels, various styles of saws, bits, gouges, etc.); names and knowledge of the various kinds of wood and other materials used; smoothing, planing, dressing, straightening, sighting, and cutting of boards and other pieces of wood, according to dimensions or patterns furnished. Whittling of pegs, cutting out with saw and chisel polygons and other ornamental designs based on geometrical drawings; taking apart, putting together, grinding and sharpening tools; simple joining with tenons and mortises, forked joints, dove-tailed joints, miter joints and angle, butt and notched joints, sketching and making of objects of simple construction, with tenons, pins, tongues, mortise, dove-tailed and square joints, such as plain tables, desks, benches, sawhorses, ladders, stepladders, shelves with brackets, various kinds of boxes.

**Technical**—Study of construction; the use and care of the tools which are used; study of qualities and nature of wood and other materials, taken up as they come into use.

**Carpentry Drawing**—Drawings of the various orders of architecture, from the point of view of their application to the trade, and for the development of sense of proportion. Study and drawing of complete objects, as inside doors with

complicated frames, street doors, storm doors, sliding doors, various styles of paneling and stair-cases, with details carried out on a full scale. Study of roof framing, pitch, form, and materials to be used.

## METAL WORK AND MACHINE SHOP PRACTICE, INCLUDING PATTERN MAKING

Construction of simple articles involving practice in filing, fitting, drilling and forging, together with free-hand sketches and working drawings.

Construction of articles involving the above, and also soldering and the use of the shaping machine.

The nature, use and physical properties of cast iron, wrought iron, steel and brass. The general construction of the drilling machine, punching and shearing machine and the shaping machine.

Construction of gauges and more difficult articles involving more accurate work, and including fitting, forging, turning, screw-cutting and shaping, with sketches and working drawings of the same; the construction of the lathe and other machines; the manufacture of iron and steel.

Making sketches and working drawings for the construction of a complete tool or scientific apparatus involving fitting, forging, turning, screw-cutting, shaping and milling.

Cutting speeds; speed of machines; accessories; methods of driving, etc.

### PATTERN MAKING

Sharpening tools; joinery; small patterns; patterns of simple parts of machines. Machine tools; gears; patterns and molding flasks; shrinkage and strength of materials.

*Mechanics*—The most important kinds of motion; the fundamental law of inertia and of reciprocal action; conception and effect of a force; the fundamental law of acceleration; mass; power of work of moving bodies; the fundamental law of the independence of motions; composition and resolution of forces; forces in one plane, with different points of application; static momentum; couples.

*Technical*—Study of iron ores; the foreign elements in iron, and their effect on it; production of pig iron (management and products of the blast furnace); the iron, steel and brass foundry; production of malleable casting; production of wrought iron and steel (finery process, puddling process, Bessemer process, Siemens-Martin process); the forms of the kinds of iron found in commerce; sheet metal; other metals—copper, lead, tin, zinc, aluminum; alloys—brass, bronze (aluminum alloys).

*Drawing*—Construction of the parts of machines; construction of teeth for spur gears and bevel gears; construction of hubs and spokes, couplings, bearings, etc.; making workshop drawings for models, component parts of lathes, milling machines and grinding machines; continuation of sketching exercises.

## LABOR'S BILL FOR CONGRESSIONAL ENACTMENT

A BILL To cooperate with the States in encouraging instruction in agriculture, the trades and industries, and home economics in secondary schools; in preparing teachers for those vocational subjects in State normal schools; and to appropriate money therefor and to regulate its expenditure.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That commencing with the fiscal year beginning July 1, 1913, there shall be appropriated, out of any money in the Treasury not otherwise appropriated, to be paid as hereinafter provided to the respective States and Territories and to the District of Columbia for the maintenance of instruction in agriculture and home economics in State district agricultural schools of secondary grade, as herein provided, the sum of four million dollars annually; for the maintenance of branch agricultural experiment stations, to be located at said agricultural secondary schools, to be administered as parts of the respective State experiment stations now established or which may hereafter be established in the respective States and Territories in accordance with the Act of Congress approved March 2, 1887, the sum of one million dollars annually; for the maintenance of instruction in the trades and industries and home economics and agriculture in public schools of secondary grade the sum of five million dollars annually; and that commencing with the fiscal year beginning July 1, 1910, there is hereby appropriated, out of any money in the Treasury not otherwise appropriated, for the maintenance of instruction in agriculture, in trades, in industries, and in home economics in State and Territorial normal schools, the sum of one million dollars annually.

SEC. 2. That the funds appropriated under this Act for education in public secondary schools and in State normal schools shall be allotted to the States and Territories and the District of Columbia in proportion to their population, as shall be determined by the census of 1910, and that the funds for the district agricultural high schools and branch experiment stations shall be apportioned to the respective States and Territories in proportion to the persons engaged in agricultural pursuits, as shall be shown by the census of 1910: *Provided*, That in each State and Territory with less than three hundred thousand inhabitants there is hereby appropriated for normal-school instruction the additional sum of three thousand dollars, and that to each State and Territory with less than one hundred thousand people engaged in agricultural pursuits there is hereby appropriated for district agricultural high schools the additional sum of five thousand dollars annually, and for branch experiment station work the additional sum of two thousand five hundred dollars annually.

SEC. 3. That each State and Territory, in order to secure the benefits of this Act, shall accept its provisions and shall divide the State or Territory into districts, providing in each district for one secondary agricultural school and a branch experiment station, the total number of such districts in a given State or Territory to be not less than one for each fifteen counties nor more than one for each five counties and fraction of five counties; and shall enact laws providing for the allotment of the funds herein appropriated to the respective schools to which it may choose to allot funds under the provisions of this Act, and shall provide for the administration of the use of the respective funds herein appropriated: *Provided*, That in States where separate schools are maintained for the colored race the allotment of money for the encouragement of instruction in the aforesaid vocations shall be divided in each State in proportion to the population of the two races, respectively, and whether the districts for agricultural secondary schools for the two races are contemporaneous or not contemporaneous their total number shall be determined by the number of districts permissible under the provisions of this Act: *Provided*, That in case the legislature of any State or Territory has not been in session to comply with the terms of this Act, the governor, acting for the State or Territory, may accept the provisions of this Act in its relation to State normal schools pending the convening of the legislature.

SEC. 4. That no State or Territory shall be entitled to its allotment for branch experiment station work until its legislature shall, by law, have provided for the establishment of said branch experiment stations and shall have provided for the annual maintenance of such stations at least an equivalent sum to that appropriated annually to the State or Territory under this Act; and the sum paid to each State and Territory for branch experiment stations shall be applied only to paying the necessary expenses of conducting, by such branch experiment stations, experiments bearing directly on the agricultural industry of the United States, having due regard for the varying conditions and needs of the respective States and Territories.

SEC. 5. That the funds appropriated in this Act for instruction shall be used only for distinctive studies in agriculture and home economics in agricultural secondary schools in the respective districts provided for in this Act and for distinctive instruction in the trades and industries, home economics, and agriculture in separate secondary schools organized for this purpose and in separate units or courses in regular secondary schools and for distinctive normal courses in agriculture, home economics, and the trades and industries in State and Territorial normal schools; and including shorter courses in the respective secondary schools for persons permanently engaged in or experienced in the agricultural, industrial, or home-making vocations, and continuation courses for persons, not necessarily graduated from elementary schools, who need opportunities offered by short and night vocational courses in agriculture, the industries and trades, and home making; and that all States, Territories, and the District of Columbia accepting these funds shall provide other funds with which to pay the cost of providing the necessary lands and buildings and to pay the cost of instruction in such other and general studies as will complete well-rounded courses, the main purposes of which are to give vocational as well as general preparation for agriculture, the trades and industries, and home making suited to the needs of the respective sections and communities of the United States.

SEC. 6. That the sum hereby appropriated to the respective States and Territories and the District of Columbia for the maintenance of instruction in agriculture, trades and industries, and home economics, and for branch agricultural experiment stations shall be annually paid, one-half on the first day of July of each year and one-half on the first day of January of each year, by the Secretary of the Treasury upon the requisition of the Secretary of the Interior, out of the Treasury of the United States, to the treasurer or other officer duly appointed by the governing boards or departments of the schools and experiment stations designated by State law to receive the same: *Provided*, That in any State there shall not be more than one State board or department thus designated for the agricultural secondary schools and branch experiment stations, not more than one State board or department for the State normal schools, and not more than one State board or department for public secondary schools.

SEC. 7. That if any portion of the moneys allotted under this Act shall by any action or contingency be diminished or lost or misapplied it shall be replaced by said State, Territory, or the District of Columbia, and until so replaced no subsequent appropriation shall be allotted or paid to such State, Territory, or the District of Columbia: *Provided*, That no portion of said moneys shall be applied directly or indirectly under any pretense whatever to the purchase, erection, repair, or rental of any building or buildings, nor to the purchase or rental of lands.

SEC. 8. That it shall be the duty of each institution receiving funds under this Act annually, on or before the first day of February, to make to the governor of the State or Territory or to the Commissioners of the District of Columbia in which it is located a full and detailed report of its operations, including a statement of all receipts and expenditures, a copy of which shall be sent to the Secretary of the Interior, a copy to the Secretary of Agriculture, and a copy to the Secretary of Commerce and Labor; and on or before the first day of September in each year to make to the Secretary of the Interior, on blanks provided by him for that purpose, a statement of receipts and expenditures of money under this Act during the preceding fiscal year.

SEC. 9. That on or before the first day of July in each year after this Act becomes operative the Secretary of the Interior, under cooperation with the Secretary of Agriculture and with the Secretary of Commerce and Labor, shall certify to the Secretary of the Treasury as to each State and Territory and the District of Columbia whether it has complied with the provisions of this Act and is en-

titled to receive its share of the allotments herein provided for schools and experiment stations under this Act, and the amounts which it is entitled to receive. If the Secretary of the Interior shall withhold a certificate from any State, Territory, or the District of Columbia for the whole or any part of its allotment, the facts and reasons therefor shall be reported to the President, and the amount involved shall be kept separately in the Treasury as a special fund until the close of the next Congress in order that the State, Territory, or the District of Columbia may, if it shall so desire, appeal to Congress from the determination of the Secretary of the Interior. If the next Congress shall not direct such sum to be paid, it shall be covered into the Treasury, and the Secretary of the Interior, in cooperation with the Secretary of Agriculture and the Secretary of Commerce and Labor, is hereby charged with the proper administration of this law.

SEC. 10. That the Secretary of the Interior, in cooperation with the Secretary of Agriculture and the Secretary of Commerce and Labor, shall annually ascertain whether the schools receiving the benefits of this Act are using the funds granted to them in accordance with the terms of this Act, and make a report thereon to Congress; and he shall also make an annual report to Congress on the receipts and expenditures and on the work of the institutions to which allotments are made under this Act, and also whether the appropriation of any State, Territory, or the District of Columbia has been withheld, and if so, the reasons therefor.

SEC. 11. That there is hereby appropriated, out of any money in the Treasury not otherwise appropriated, the sum of twenty thousand dollars annually, to be expended under the direction of the Secretary of the Interior, in paying the necessary expenses of administering this Act, in cooperation with the Secretary of Agriculture, the Secretary of Commerce and Labor, and the respective States, in paying the expenses of cooperating with the respective departments and States in developing the courses of study provided for in this Act, and in paying the expenses of preparing the reports provided for in this Act.

SEC. 12. That there is hereby appropriated, out of any money in the Treasury not otherwise appropriated, the sum of twenty thousand dollars annually, to be expended under the direction of the Secretary of Agriculture, acting in cooperation with the Secretary of the Interior and the respective States, in paying the necessary expenses of the administration of this Act with reference to instruction and investigations in agriculture and home economics, as provided for in this Act; and the Secretary of Agriculture is hereby authorized to give the schools and branch experiment stations designated in this Act such advice and assistance as will best aid them in carrying out the provisions of this Act in relation to instruction and research in agriculture and home economics.

SEC. 13. That there is hereby appropriated, out of any money in the Treasury not otherwise appropriated, the sum of twenty thousand dollars annually, to be expended under the Secretary of Commerce and Labor, acting in cooperation with the Secretary of the Interior and the respective States, in paying the necessary expenses of the administration of this Act with reference to instruction in the industries and trades, as provided for in this Act; and the Secretary of Commerce and Labor is hereby authorized to give the schools designated in this Act such advice and assistance as will best aid them in carrying out the provisions of this Act in relation to instruction in the industries and trades.

SEC. 14. That this Act shall take effect immediately on its passage.

### NOTE

The following pages purpose to show with reasonable brevity just what is being done, and what has been begun in the recent past in regard to industrial education, including the problem. What has been done in foreign countries, methods of accomplishment in this country, showing systems and types of systems; that which is being accomplished by philanthropy and private interests; also that which is being done by the Federal Government, together with the State laws on the subject, and the attitude of employers and organized labor.

In spite of all possible endeavor to make this presentation as complete as brevity would permit and to include the many experimental efforts, it was found that the time allowed was wholly inadequate for as comprehensive a treatise as desired.

## THE PROBLEM

The problem of industrial education and trade training is made very complex by the present system of specialization, and unless great care is exercised the exploitation of boys who desire to enter upon a career as a skilled craftsman is probable.

A proper apprenticeship system which will guarantee to the youth the opportunity of learning his trade as a whole is very much desired.

One of the disadvantages of many apprenticeship systems is that establishments have become so large and with so many departments with their divisions and subdivisions and processes that the time of the boy is fully employed in mastering details of one department to the exclusion of all other departments. Public industrial schools or schools for trade training should never become so narrow in their scope as to prevent an all around shop training.

The action of the National Tool Builders Association in boldly stating that they expect to train specialists will do more to call to the attention of the public the necessity for broad industrial training before the age of seventeen than any other procedure, hence a vital question to be considered is how best to provide for the future entrance into skilled trades without overcrowding them, and finally the problem is of so training the workers that they become the best kind of workers the world produces and at the same time develop conditions which go with increased efficiency—increasing wages, and increasingly better living conditions.

We must face the question as it stands, and as the Massachusetts Commission on Industrial Education has well said:

"The progressive development of all high-grade industries requires skilled workmen, possessing 'industrial intelligence'—that is, comprehensive insight into and intelligent interest in their several trades—as well as skill. The present conditions of production are usually unfavorable to the training of such workmen in the shop or factory, and sometimes render such training impossible. All industries, whatever their grade, need more men than are now obtainable, who are capable of acting as foremen, superintendents or managers—men possessing the comprehensive insight, interest and skill necessary for the organization and direction of a department or a shop. In general, such men, whether workers, foremen or superintendents, are now developed only by chance, and they are then self-made men, possessing the merits but also the shortcomings of their training.

"Meanwhile boys (and girls) are not only not directed toward the trades in our existing schools, but are actually often directed away from them by the bookish education of those schools and their purely academic traditions. The public schools are doing their work to-day better than they have ever done it. This statement is made on evidence, and is not merely an opinion. But, both on account of the youth of the children up to the end of the grammar school period and because of the general education which those schools exist to supply, it is only natural that they should not have concerned themselves with the development of a vocational purpose, nor with the training which points toward the realization of that purpose. Up to the age of fourteen the whole of a pupil's time is required for the general education on which his vocational training should be based.

"The high school pupils have entered a longer career of general education, and in most cases look forward to a business career or to further study in some



higher institution for a profession. The academic high schools, accordingly, even when they comprise so-called commercial courses or courses in manual training, are not vocational schools; they are schools for general education, and, like the elementary schools, are doing their work better than they have ever done it. They do not, however, aim to supply the specific education required for a particular calling.

"In every democratic society the schools provided the public should meet the needs of all classes—those who are not going to college, as well as those who are. The existing public high schools serve to give a general education to those pupils whose training must cease on graduation, and at the same time they offer preparation for admission to college or some higher technical school. The manual training high schools—or so-called technical high schools—were intended originally to train recruits for the trades, but they have not done so. They are institutions for general education, like the academic high schools, but, unlike them, serve to give a certain class of pupils a general high school education with the help of manual training, or, like them, to prepare their pupils for higher training in some college or engineering school.

"Boys are not wanted in most of the skilled industries until they are sixteen years of age. The total result is a great number of boys and girls from fourteen to sixteen years of age, most of whom are at work in various kinds of juvenile occupations, in which they learn no trade, are subject to little if any beneficial general education, and often to much harmful education from shifting experience and environment. Large numbers of these children would be in school if the school promised preparation for some life pursuit. These years are of little economic value to such children, and there is little increase in the economic value of most of them as time goes on. Hence, these are at present wasted years—lost to the children because of a lack of economic growth, and to the industries because children are not fitted to satisfy the demand for trained workers by the time they are old enough to be employed in the trades.

"These years and the subsequent years are, however, valuable for industrial education; but there is at present no agency whereby this education is provided, save here and there to a limited extent only, and then chiefly by philanthropy.

"Hence the need of industrial schools to supplement the existing school system, and to meet a new educational need which has developed with the evolution of our industries and commerce."

## FOREIGN INDUSTRIAL TRAINING

### GERMANY

The industrial schools of Germany are justly celebrated for their thorough, systematic and comprehensive instruction. They cover the whole educational period: there are the lower industrial schools, which connect directly with the common schools, and thus become continuation schools and give training to workmen; the higher industrial schools, which correspond to our technical colleges and produce the leading technologists; and the middle industrial schools for pupils who have gone through the lower industrial schools, but who desire to shorten the period of higher education, although they wish to prepare themselves to become upper foremen or assistant superintendents.

As a usual thing, the instruction in the lower school is given in the evening and on Sundays; but there is a general movement towards carrying on all this instruction in the day time, as is now chiefly done in the city of Munich, where these schools are found in their greatest perfection.

It is by a combination of the financial resources of the city, the trade guilds and the Central Government that the great expense of these schools is met. But their importance is fully realized. Attendance upon these schools is compulsory for apprentices. In the lower industrial schools of Munich instruction in about forty different trades is provided.

In Germany, as in the other European countries, the State takes the liveliest interest in the encouragement of local industries. In one of the Munich technical schools, whose building cost half a million marks, the annual expense of maintenance is 80,000 marks,\* of which the State contributes one half and the city the other half. In another of the Munich schools, where there are some 1,800 pupils, with a teaching staff of 100, the equipment is most complete; in the printing department, for instance, 28,000 marks were expended on machinery alone.

Of the special industrial schools in Germany, those devoted to textile industries are among the most interesting; and here again was found a lower school for the training of workmen and a higher school for the development of superintendents and specialization experts.

Berlin is, with its great school of arts and its industrial art museums, without question, the great center of industrial art in Germany. These institutions offer both day and evening instruction, and the classes are well attended, the total number of pupils running well up into the hundreds.

It has been distinctly recognized in Germany that there must be a proper blending of purely educational and purely industrial forces in order to produce the desired effects in industrial education; nevertheless, in this combination it has been the industrial force which has had the administrative duties to perform, and the purely educational force has been active chiefly in an advisory capacity.

Attention is called to the following quotation from a special consular report, printed at Washington (Department of Commerce and Labor, vol. 33, p. 137), which indicates the most satisfactory methods of industrial school management shown by the experience of Germany:

"The experience of Germany and the administration of her industrial schools goes to show that the subordination of the system of industrial education to the same administrative body which controls the system of general education is unwise. It also goes to show, on the other hand, that the total withdrawal of the industrial schools from the influence of the administrators of the schools for general education is likewise detrimental to their most efficient development, as will be at once recognized. This is due to the fact that industrial schools have two sides to their constitution—an educational and an industrial side. Proper education methods must be employed, and the educational needs of industry must be wisely judged. One requires knowledge of educational method: the other, of industrial aims and requirements. A wise administration has hence been found to

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\*About \$19,000.

involve the participation and co-operation of two administrative departments—that which has charge of educational affairs, and that which has charge of industrial affairs. As was seen, such co-operation, though expressed in various forms, is practically universal in Germany; that department in which is vested the administration of commercial and industrial affairs almost invariably exercising a predominant control, while the educational interests of the industrial schools are generally safeguarded by advisors, councils, commissioners and other bodies well informed on modern education methods.”

### FRANCE

Up to the beginning of the last quarter of the nineteenth century France had regarded industrial education as within the sphere of local control entirely, on the ground that each community best knows its own industrial needs. The result is that there grew up a large number of independent local schools for the education and training of industrial workers. In the latter part of the seventies, however, the general government began to take that active part in industrial education which has marked its policy during the past twenty-five years. How this activity has increased is shown by the fact that while we find in 1880 but 48 of the broadly designated industrial schools received State aid, yet only twenty years later nearly 300 schools were receiving aid from this source. It is markedly significant that the power of such control is invested in the Department of Commerce and Industry. A few special schools relating to industries, however, are under the control of other departments.

The Ministry of Public Instruction and Fine Arts has oversight of the distinctive schools of the theory and application of art.

The schools relating to roads, bridges and mines are under the University of Public Works.

It was found that the industrial schools of France, even at the present time, exist under a great variety of conditions as regards control, maintenance and functions. There is a well-developed and comprehensive system of trade and technical schools under government control; there are separate schools maintained by departments and municipalities; there are numerous so-called private schools which are maintained by private individuals or private or semi-private organizations.

In general, the schools carried on under government auspices furnish a broad, fundamental training in scientific and technical work, which prepares the pupil to specialize later; and enough practical shop work is given (particularly in the metal and wood working trades) to develop such manual skill in the pupil that he can enter at once upon the practical work of some handicraft after leaving the school, not as a master workman, or even a fullfledged journeyman, but as an advanced apprentice.

In France, the pupils begin their trade studies as early as thirteen years of age, and the training received has a thoroughly recognized value in France. The French schools are conducted on much more formal lines than in England, and some of the Paris schools draw upon the various departments of France as well as upon Paris for their pupils. The high character of the work in French schools is particularly noticeable—even that done by the youths whose ages do not exceed fifteen years.

A decided tendency of these schools is to educate the pupils artistically as well as in skillful manipulation. Places in the schools are eagerly sought by ambitious young people who desire to prepare themselves for higher positions in the trades, for they recognize that this education means greatly increased earning ability.

Breadth of training in the French schools is indicated by the training given in the Estienne Professional School for Bookmaking, where, during the first six months of instruction, the pupil is introduced to the rudiments of the various associated trades taught in the school; he is then required to make a choice of one of the seventeen specific trades taught, and this he follows to the end of his course.

### BELGIUM

The industrial schools of Belgium are patterned after the French schools rather than after those in Germany, but in government they more nearly resem-

ble the English schools. The State has adopted the method of subsidizing local schools and such supervision as this implies.

The schools have various origins; some are of independent establishment, some have been founded by the communes, and others by the provinces. They are all, however, under a rigid government inspection. A corps of qualified inspectors is maintained for this purpose by the Department of Industry and Labor, which has control of this branch of education.

The State grants are in proportion to the practical value of the school. For the general industrial schools an appropriation is made of one-third of the total expenses of the school in excess of the payment for rent and receipts from tuition. Trade schools proper receive from the State two-fifths of the expense of maintenance and also one-half the cost of equipment with appliances for instruction.

Tuition is free in some cases, in others a small entrance fee is charged, while in some a tuition fee is charged.

The plan of organization and program of all the schools must be approved by the State; but the detailed practical administration is in the hands of a local commission, some members of which are appointed by the State and province. The mayor is usually chairman of this commission.

Since the schools are established to meet special wants of different localities they can not be distinctively classed as those found in some other countries. They are, however, subject to a rough classification as industrial schools and trade schools. In all schools trade and industrial drawing from life and models is made a special feature of the instruction.

It must be remembered, however, that the Belgians pay special attention to the trade education of their young women. The schools for young women may be divided into trade schools proper, in which special manual training is taught, and house-keeping schools. Some schools combine the characteristics of both divisions.

In the trade schools broad general courses are given, as well as special trade instruction in dressmaking, millinery, artificial flower making, ornamental drawing, painting, making of lingerie and embroidery.

The housekeeping school fit girls both to care for their own homes and to go into domestic service. A course of general instruction parallels the practical domestic work. These schools are numbered literally by hundreds.

There are also combination schools, which fit girls for trades and at the same time give thorough instruction in housekeeping. In these schools less time is devoted to general studies.

Usually the instruction in these girls' schools extends over three or four years, but in the schools where housekeeping is given most prominence a year less is required. Such schools may be reimbursed by the State for as much as two-thirds of their operating expenses.

Advanced trades courses are given to those graduates of the trade schools who wish to become forewomen.

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### SWITZERLAND

In Switzerland there is provision for the supervision of the apprenticeship system. The regulations are quite minute but very comprehensive. Their aim is to elevate apprenticeship and develop the professional value of workmen in the various arts and trades, etc. Among other things apprentices must be given instruction; the employer either himself instructs or causes the apprentice to be otherwise instructed in a gradual and complete way in the profession, art, trade, or branch of trade which is the object of the apprenticeship contract; for each apprentice must be allowed during the work period such time as is necessary for the performance of his religious duties and the scholastic instruction required by law.

The laws of the different cantons provide for the supervision of apprentices, their examination, penalties for breach of contract, duties of the master, duties of the apprentice, civil duties, etc.

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### ENGLAND

While in England there are national subsidies, and consequently national control of industrial education, yet the local conditions vary enormously, and no

one place will stand as a representative example of the whole country, or even of any extended section of it. There can be no doubt, however, as to the national and local awakening to the need of industrial education; but the existing social conditions which have to be met, and which are not only peculiar to England but to the separate localities, will make progress slow and experimental. It seems to be a fact, however, that in general the industrial education movement is most active and farthest advanced in London.

In Liverpool, with its great technical school, which cost upwards of half a million dollars, the conditions are most interesting. There are 1,500 pupils in the evening classes, but, except for some special summer classes of adults, this finely constructed and well equipped building is unoccupied during the day-time, largely, perhaps, because it is feared that day-time industrial instruction would interfere with the regular public schools by prematurely attracting pupils from them. As a rule, pupils do not apply for instruction in this school unless they are working, or have worked, in the trade that they wish to study, the evening pupils being employed during the day time in the occupation in which they seek instruction.

The famous Manchester School of Technology is housed in a magnificent building, which cost \$1,500,000, and run on a correspondingly large scale. The enormous running expenses are paid in part by the State, in part by the city, and in part by students' fees.

London seems to be fairly well provided with polytechnic schools of the class of those in Manchester and Liverpool, for it has seven such institutions, to which boys of sixteen to eighteen years of age are admitted after a shortened course in the secondary schools. Its provisions for elementary technical education assume enormous proportions.

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### SCOTLAND

In Scotland the two representative institutions devoted to industrial education are the Heriot-Watt College at Edinburgh and the Glasgow and West of Scotland Technical College at Glasgow. The work of the former school embraces day, evening and summer courses along the lines of applied education.

The Glasgow and West of Scotland Technical College at Glasgow is housed in a new building of imposing proportions. Originating as long ago as 1796 as Anderson's College, it owes its existence to John Anderson, professor of natural philosophy in the University of Glasgow, who was in the habit of visiting the local works, and thus becoming acquainted at first hand with the trade industries of Glasgow and the men who carried them on and did the work. In 1886 this college was united with other local institutions to form the great school which is now conducted under the present name. It was the declared object of the school "to afford suitable education to those who wished to qualify themselves for following an industrial profession or trade." The expressed purpose of this school is not to supersede the ordinary apprenticeship, but rather to supplement it.

There has been spent on the building nearly a million dollars, and an additional expenditure of \$350,000 is planned for. The equipment has cost \$125,000 and an additional \$150,000 is deemed necessary to place the instruction on the desired basis.

The total attendance on the school is about 6,000 students, three-fourths of whom are evening pupils. It should be distinctly noted that about 70 per cent of the day students and 80 per cent of the evening students are over twenty years of age. The day students come from all parts of the British Islands and the Colonies, while practically all the important works within twenty-five miles of Glasgow are represented in the evening classes.

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### IRELAND

In the field of industrial education the main work of the Department of Agriculture and Technical Instruction in Ireland is to provide proper instruction for those who have finished with the elementary or intermediate schools, and who are already engaged in some employment or are obtaining advanced education in some higher institution. The vast majority of persons who are to be pro-

vided for have but the elementary school education, and yet, in order to obtain the highest results, their education must be carried on to quite an advanced stage. In order, however, to benefit most from the technical schools, a preliminary practical experience is a necessity. This can be obtained, by boys, in the lower schools by wood work, drawing and elementary science instruction, and in the county schools by elementary agriculture; for girls, the corresponding instruction should be needlework, cooking, laundry work and domestic science.

Few persons outside of Ireland are aware of the extensive provision made for industrial education in Ireland. This matter is considered of such importance that a sum of no less than a million dollars is spent annually in this island for this object, and this with a population not very much larger than that of Massachusetts. Of this sum \$250,000 is contributed by the local authorities and the remainder by the Council of Agriculture.

It is significant that the work of giving industrial training in Ireland is in charge of a department bearing the title "Department of Agriculture and Technical Instruction for Ireland," thus placing agriculture and the handicrafts on the same plane. This department is of recent creation, and the impulse given by it to science and technical instruction may be realized when it is stated that in 1900 but 6 secondary schools possessed laboratories, while in 1907, 265 of these schools are equipped with these important adjuncts.

An elaborate scheme has been prepared for the technical training of all classes which desire to pursue some special trade or handicraft calling, and schools appropriate to their needs have been established. The larger cities have established technical institutes on a most elaborate scale in which various trade and academic courses are offered. Prominent among these schools are the Municipal Technical Institute at Dublin, Cork and at Belfast. These schools are housed in magnificent buildings and possess thorough equipment for trade instruction.

# METHODS OF ACCOMPLISHMENT

## Showing System and Types of System

### NEW JERSEY

#### SCHOOLS UNDER INDUSTRIAL EDUCATION ACT

Three State schools have been established under the Industrial Education Act of 1881—the Newark Technical School (1885), the school of Hoboken (1888), and the Trenton School of Industrial Arts (1898). The Hoboken school is operated in conjunction with the schools of the city. It is co-educational and offers instruction chiefly to those who come, during the day, from the seventh and eighth grades of the public schools. The Trenton and Newark Schools are co-educational, and give instruction almost entirely in the evening to those who are at work during the day time. The last-named schools afford instruction of elementary and secondary type. The Newark Technical School was the first to be established under the Industrial Education Act. Its growth has been persistent and steady. It has withstood the temptation to become an institute of technology, and has hewn to the practical lines laid down by the Industrial Education Act. Its graduates are found among the "captains of industry." Their record as to financial earnings is a striking illustration of the money value of the right sort of industrial training. The students of the Newark Technical School and of the Trenton School of Industrial Arts are drawn chiefly from among those who leave the elementary school early in life in order to go to work, and they are earning their daily bread while obtaining a technical education. It speaks well for such institutions that the average graduate of the Newark Technical School, for instance, has added an income of one thousand dollars per annum to his earning capacity above that which he would have had if he had not attended the evening school. And the economic value of industrial training is not to be disregarded. The economic need will bring back to the evening schools thousands who will learn to do their work better and to perform a greater service to society.

### MASSACHUSETTS

#### PLAN OF INDEPENDENT SCHOOLS

Industrial schools must be established as independent schools, because the motive or end for which they exist, namely, vocational training as contrasted with general training, determines the value of the instruction in every detail. In order to keep such schools in close touch with the trades and with agriculture there should be local advisory boards, including representatives of the industries concerned, employers and employees.

Such schools should offer four years of training, as described below, for pupils fourteen or fifteen years of age on admission; but it believes also that such schools will be developed gradually. Pupils who could take only a partial course in the proposed schools would be all the better apprentices because of their school training, however brief it might be.

When the schools are fully established the commission believes the four years of instruction might be divided as follows:

The first two years would cover general shop instruction, at least two hours per day, together with related mathematics, drawing, natural science and English.

The work of the last two years—which could be gradually completed during a longer period in the evenings, or on the part-time system, meaning part of the time in the factory or shop and part of the time in the school during working hours, whether on the same day, or at intervals of several days, or even weeks, by pupils who were obliged to go to work at sixteen—should give the shop instruction for particular trades, and for each trade represented the drawing, mathematics,



mechanics, physical or biological science applicable to that trade; the history of that trade, civics treated as concretely as possible; and shop and business English.

It is further intended to provide for evening pupils; and it intends to make every effort to secure the co-operation of employers, to the end that part-time courses for apprentices may be established in the proposed schools.

There has been established under this plan five day schools, as follows, in Lawrence for textiles, in Beverly for machinists, in New Bedford for miscellaneous trades, in Northampton and Montague, for agriculture.

## NEW YORK PLAN OF FACTORY SCHOOLS

### SEPARATE SCHOOLS, BUT TO ARTICULATE WITH PUBLIC SCHOOL SYSTEM

The law providing for the establishment and maintenance of industrial and trades schools divides these schools into two classes: (a) industrial schools open to pupils who have attained the age of 14 years, and (b) trades schools open to pupils who have attained the age of 16 years. Both classes of schools are under the control of local boards of education, having full power and authority over teachers, courses of study and equipments. Each school is required to have an advisory board representing the local trades and industries, to counsel with and advise the local boards of education.

This system of industrial and trades schools is to be flexible enough to provide: (1) for those who can attend school all day; (2) for those who must work a part of the time in order to earn a living, but can afford to go to school a part of the time, and (3) for those who must work all day, but can attend school at night.

It is planned to have four year courses in these schools, first because this length of time is necessary to produce the requisite mental and physical training for a life of progression in industrial efficiency; and, second, because it enables the school to attract and hold the student from 14 to 16, when his growing power is greatest and his earning power least. The studies for the first two years are quite general in character, being designed to round out the elementary school instruction, laying the foundation of industrial efficiency, and arousing a set of industrial interests that will demand the work of the next two years for their fulfillment. For the last two years the studies will be more specific in character. The first two years should have developed an interest in industrial subjects, and by this time the pupils ought to have determined whether they desire to continue industrial work in the industrial school with a view to preparing for the trade pursuits, or whether they had rather enter the regular high school.

Having held the boys and girls in school for a period of two years beyond the compulsory age and having aroused a set of industrial interests, and having—it is hoped—made their parents feel the value of education, it is proper that they elect the trades school work which, according to the New York State law, comes when children have attained the age of 16 years. It is intended that these trades schools be a partial substitute for apprenticeship or the learning of a trade in commercial practice. Their aim is to impart the maximum of specialized skill and technical knowledge in the minimum of time, and in order that it may be economically possible for the future workman to attend these schools their courses must be highly specialized and must concentrate upon the development of skill and knowledge of direct practical bearing. However, it is the intention of the department to insist upon some form of bookwork and drawing in connection with this special shop practice, believing that the trades school proper should aim to give such an ideal preparation for the trades as shall abolish the drudgery and waste of the learner's time in the shop, by supplying in the school an economic instruction in the practical work and in the necessary theory of the trades. These schools are professional schools for those who are to become workmen. Trade schools approach as near to making artisans as medical or law schools approach creating efficient doctors and lawyers. The old saying, "Practice makes perfect," is applicable here.

There should be in the curriculum of the trades school, therefore, nothing that is not of direct assistance for preparing pupils for work in the trades. Such mechanical drawing, mathematics, applications of elementary science and English

as are necessary will be given with the direct purpose of increasing the individual efficiency of those who are to be young apprentices.

The department has been using the term "general industrial schools" and "trade schools" with the conviction that the industries could be classified under two heads: (1) those which employ such methods of production as require many employes who work with much machinery, and (2) those in which much of the constructive work is essentially industrial and quite independent of machinery. In the first class are the highly specialized industries, such as shoes, textiles, knitting and clothing. The department believes that industrial education fitting the needs of workers in these industries must aim to train all-round workmen, or at least so train the graduates of its schools that they have the requisite adaptability and skill to advance readily through the various activities of the factory. In the second class are the trades of plumbing, pattern making, book binding, printing, cabinet making, etc. The department is convinced that workers in such trades need such perfection of skill and intelligent direction of effort as will make them masters of one trade, and it is the business of the public schools to give all possible help to such people. Indeed, we are already doing this for those in the professional and managerial ranks.

The department finds the urgent need for evening trade and technical classes for bettering the opportunities of men and women already employed in industrial occupations during the day. One of the most important services which can be rendered by existing schools that have shop and laboratory facilities is to offer such opportunities through practical courses of evening instruction.

In general, these schools should be of every kind for which there is a demand on the part of the people. The system should be exceedingly flexible. The school should be taught by workmen who can teach, rather than by teachers who have theories about work. The instruction should be "shoppish" rather than "bookish," although of course book work is always desirable.

The first school under this plan was established in Rochester in December, 1908. Plans for several others are under way.

### THE MILWAUKEE SCHOOL OF TRADES, MILWAUKEE, WIS.

The Milwaukee School of Trades was founded by the Merchants' and Manufacturers' Association of that city. It was opened for instruction in January, 1906. The trades first taught were plumbing and pattern making, in day and evening classes. Instruction in telephone cable splicing was given during its first term of six months. Beginning with September, 1906, a course in the machinist and tool-making trade was instituted, and instructional work in telephone cable splicing was discontinued.

The school grew so rapidly and was proving so great a help to the young men of Wisconsin that it was deemed advisable to introduce a bill into the recent legislature, at Madison, requesting a one-half mill municipal tax on the taxable property of Milwaukee, for the use of industrial education. The bill met with immediate favor, and became an act.

This is the first trade school in the United States to be sustained by a special levied tax for industrial education, giving tuition free to the residents of Milwaukee between the ages of sixteen and twenty years.

#### TRADES OFFERED

Pattern Making.  
Machinist and Tool Making.  
Carpentry and Wood Working.  
Plumbing and Gas Fitting.

The length of the course in each trade consists of two years of fifty-two weeks per year and forty-four hours per week, with the exception of the plumbing trade, which requires but one-half of the above time. School closes for legal holidays only. It is the aim of the school to place the student in conditions as nearly as possible like those he will meet in actual practice. School hours are from 8.00 to 12.00, and from 1.00 to 5.00 daily, except Saturday. Saturday session, 8.00 to 12.00. Evening classes, 7.30 to 9.30, on Monday, Tuesday, Thursday, and Friday nights of each week from October 1 to April 30.

It is not the purpose of the school that its graduates shall be merely skilled artisans; it is intended that they shall be not only trained and efficient, but intelli-

gent workmen, desirous of making the most out of themselves in their chosen vocation from its every point of view.

It is also the aim of the school to secure instructors who are specialists in their line, men who are interested in the work, and who can impart their knowledge and experience to apprentices.

The class of work given to the students is carefully planned to be as nearly as possible of equal educational and practical value. Thus the student's interest is aroused and held. A high standard of workmanship is demanded from every student and only those attaining are permitted to graduate.

The night classes are planned principally to supplement the experience of apprentices and workmen who are employed during the day at the trade in which they desire advancement under night instruction. The total day instruction of the two year courses requires four thousand four hundred and sixty-four hours. The total night instruction of one term of thirty-one weeks at eight hours per week amounts to two hundred and forty-eight hours. Thus it is evident that none but students of exceptional ability and determination could expect to serve the entire school apprenticeship in night classes only. The school does not advise students to attempt to learn a trade by this means.

Students must supply their own drawing instruments and all drawing material, and are requested not to purchase them until properly advised by their instructor.

The school grants a diploma to each student completing the prescribed course in a satisfactory manner and passing the final examination.

Any student who completes his apprenticeship, as outlined in the regular course, in less than the scheduled time for his trade, may graduate and receive his diploma as soon as he passes all the requirements incidental to that trade in a satisfactory manner.

The school does not guarantee positions to its graduates. It has, however, many applications for them, and those attaining the best records, in point of application and ability, will be recommended for the best positions. It is not the policy of the school to recommend apprentices before they have successfully completed their course.

## PARTIAL TIME TRADE SCHOOL

### DEAN SCHNEIDER'S PLAN, CINCINNATI, OHIO

The co-operative system. The fundamental principle of the co-operative system is very simple. It is this: the technique or the practical side of the work is taught only in a shop or store which is working under actual commercial conditions, and the science underlying the technique can be taught properly only by skilled teachers. All questions as to who shall supply the school teachers (the shop or the public); the hours the student works, and the hours he is taught; the periods of alternation of shop and school work, if alternating periods be used; and the curricula of the schools—all these are matters of detail to be considered for each particular case.

The economy of the system is at once apparent. In an engineering school, for instance, twice the number of students can be taught at about two-thirds the expense as compared with the four-year theoretical system. The same is probably true in industrial education, for under the co-operative plan the schools will not require any physical equipment; all their money can be used for brains and for buildings for teaching purposes only. There is a further economy to the student. In this case he is earning while he is learning, while under the trade school system he does not earn until he has completed his trade education. Parenthetically, it should be stated that no displacement of the present high school courses is contemplated.

The co-operative system is part of the public school system. The students are divided into two groups which alternate every week. That is to say, this week one-half of the students are in the day school and one-half are in the factories. Next Monday morning these groups will change, and those who are in the school this week will go to the shops, and those who are in the shops this week will go to the school. Since the public school becomes a part of the apprenticeship system, it has a voice in the organization of the apprentice course in the shop, and is in loco parentis to the boy, so far as his shop work is concerned. It ought to be

obvious that the boy will receive a fair training in the shop because the school is in a measure watching over this phase of his work.

It is not intended, of course, that this plan should apply only to factories. It will apply to a boy learning the tailor trade, the butcher trade, the baker trade, or any other trade. It is necessary, however, to obtain two boys to alternate in the shops.

The course is of five years' duration. At the end of that time the student has been taught the simple science underlying his trade; he has been taught shop mathematics; he has been given a certain amount of cultural work; he has become a fair mechanic. In brief, he is at the beginning of specialization.

It has been found further that the money earned every alternate week, and for full time during the summer, is sufficient to pay for the simple wants of these children. It is also true that there is seldom an instance when a child is hindered by financial conditions from taking such a course.

The school in Cincinnati under this plan provides for 226 students, who are at school or at work nine hours a day, six days a week, for forty-eight weeks.

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### I. T. U. COURSE IN PRINTING

**CONDUCTED BY THE INLAND PRINTER TECHNICAL SCHOOL, UNDER THE DIRECTION OF THE INTERNATIONAL TYPOGRAPHICAL UNION COMMISSION ON SUPPLEMENTAL TRADE EDUCATION**

The commission having in charge the activities of the I. T. U. was established by the action of the 1907 convention of that organization.

This course in printing is an effort to teach and disseminate the art principles that underlie good topography. It is imparted by correspondence, the student being given personal instruction and criticism of his work by expert instructors. First-class display or decorative typography is not a matter of taste, but results from expounding (usually unconsciously), the well known principles of design. They are familiar to the commercial artist and in the course they are made clear to the craftsman, it being written by printers for printers.

The lessons are arranged logically for the man or youth with office experience. Principles are expounded first and then the student solves problems in practical work (either in type or by sketches, as best suits his circumstances) under competent instructors. Nearly twelve hundred students have enrolled within a year. This, notwithstanding it is a new idea in typographical education and introduced in a novel way. The course is open to any person engaged as a compositor. The course prepares the compositor for the best work of to-day or to-morrow, is logically arranged, and begins with making the real tools of the printer—letters; shows, through a study of the principles of design, the *how* and the *why* of display work; equips compositors to do the work of the designer; insures better results, as ability to design and execute are thus co-ordinated; elucidates color harmony in a scientific though simple manner by a printer for printers; gives thorough training in all descriptions of display or decorative typography, after the student has been drilled in underlying principles which he applies to his work, which thereby becomes his own production, not an imitation of some other compositor's work; is imparted by a universally commended system of correspondence, which insures close personal attention not possible by the class method of instruction, and insures the student the best advice on trade problems as long as he remains at the trade.

This course makes an especially strong appeal to the victims of specialization, who are now at one branch of the trade and that not a very skillful or lucrative branch. The prevailing system of apprenticeship deadens the initiative where it is alive and allows it to remain dormant where it is not highly developed.

The course consists of thirty-seven lessons, as follows: The first nine have to do with lettering, lessons ten to fourteen, treat of design; fifteen to nineteen, treat of color harmony, and the next eleven lessons on composition of various kinds, and the remaining seven lessons consist of information on paper making, plate making of various kinds, and imposition.

# PHILANTHROPY

## WILLIAMSON FREE SCHOOL OF MECHANICAL TRADES

The Williamson Free School of Mechanical Trades was founded and generously endowed by Isaiah V. Williamson, merchant and philanthropist of Philadelphia, on December 1, 1888.

Its first class was received in 1891. Since that time 726 pupils have been graduated, as follows:

Bricklayers .....	170
Carpenters .....	150
Stationary Engineers .....	69
Machinists .....	198
Pattern Makers .....	139

The school property consists of 24 buildings, located on 230 acres of ground in a beautiful hill section of Eastern Pennsylvania, 16 miles from Philadelphia. It has its own light, water and sewerage plants, railroad station and post-office.

### CONDITIONS OF ADMISSION

Admission of pupils is made in April of each year, none being received who are under sixteen or over eighteen years of age. The candidates largely exceed in number the capacity of the school.

Natives of any of the States are eligible for admission, but in accordance with Mr. Williamson's Foundation Deed preference is given to applicants born in Pennsylvania, in certain prescribed order as to various counties.

As the Pennsylvania candidates are very numerous, the admissions for some years past have been necessarily confined to such.

Candidates are required to pass scholastic, moral and physical examinations, and only those are accepted who are able-bodied, moral, intelligent and possessed of natural aptitude for mechanical pursuits.

They must be sufficiently advanced in the common school branches to enter readily on the school work. The academic examinations include reading, writing, spelling, arithmetic (embracing fractions, weights and measures and interest), geography, United States history, composition and language.

Those candidates who are accepted are given a preliminary trial, and all who prove satisfactory are indentured for the term of three years from entrance. Each apprentice takes but one of the five trades above named, the assignment to the same being made before admission.

Special attention is called to the fact that the school is only for young men who purpose following for a livelihood the trades taught them, and no others will be admitted.

### SCHOOL LIFE

By the terms of Mr. Williamson's Foundation Deed, the benefits of the school are entirely free. These include boarding, instruction, clothing, etc., during the entire course.

The school is open all the year, but regular exercises are suspended during the month of August, when such pupils as desire are given a vacation. There are short holidays at Christmas, Fourth of July and Thanksgiving.

The trustees deem it to be as essential to have the pupils become good men as good mechanics, and special attention is given to their moral training. The school is non-sectarian, but each pupil immediately after admission is required to designate the religious denomination of his choice, and thereafter attend its services regularly at its place of worship in the neighborhood.

### METHODS OF INSTRUCTION

The school is in session eight hours daily on five days of the week, and three hours on Saturday, each apprentice spending about one-half of the time in the

shops during the first year, the proportion gradually increasing until the last few months of the senior year, when it includes the entire day. During the last year of the course there is evening instruction three days in the week in strength of materials, higher mathematics and theory of steam engine.

The branches taught in the academic department are reading, writing, grammar, arithmetic, algebra, geometry, trigonometry, physical and political geography, United States history, English literature, physical science, physiology and hygiene, civil government, chemistry, elementary vocal music, theory of the steam engine, strength of materials, building construction, mechanical and free hand drawing, and estimating.

The instruction in drawing pertains directly to the apprentice's particular trade. The mechanical courses are systematic, and the exercises are very comprehensive and thorough, and are based on instructional methods. The school is not a factory, and nothing is made for sale, its sole object being the benefit of its apprentices.

Although our school day is eight hours long, there is generally excellent attendance in both mechanical and academic departments, the happy combination of the two leaving our young men fresh and bright at its close.

We have secured most excellent results from devoting about one-half of each hourly period in the academic department to recitations and the remainder to preparation of the succeeding lesson in that particular subject, under the teacher's supervision.

One hour, five evenings in the week, is also devoted to study in the pupils' rooms. There is no doubt that training for the professions (architecture, engineering, law, medicine, teaching, etc.), is best made in educational institutions conducted for that purpose. Similar principles and methods applied to the five trades taught in this school have given remarkably satisfactory results. Indeed, the necessarily closer connection between instruction and practice in trade teaching increases the efficiency of the same.

Instruction in trades is just as advisable and commendable as instruction in the academic branches. No one would think of suggesting the abandonment of such methods in algebra, geometry, chemistry, etc.

If intelligent young men are given carefully graded and comprehensive exercises in trade work in properly equipped school shops by competent teachers, who are high grade mechanics, with suitable accompanying academic instruction (especially in mathematics and mechanical drawing) and course of sufficient length, they will surely become skilled workmen.

This has been our experience, and with us trade education in schools is not a matter of inference or theory, but a demonstrated fact. Instruction rather than construction has been shown, after an experience of over seventeen years, to be wonderfully efficient in developing a class of journeymen mechanics of the finest grade, and the reports from employers enable us to say with entire confidence that our school apprentices immediately on graduation are, as an average, more valuable and proficient than shop apprentices when they "finish their trades."

Our pupils realize that our instructional methods are for their benefit, and their interest in their work is increased by this knowledge. It is greater we believe than it would be if we worked on commercial lines. In that case we should be obliged to subordinate their instruction in a considerable degree to our financial gain. The young men know that if we produced for the market it would be necessary to keep them to a large extent at familiar processes, even though they might be prepared for more advanced exercises, and that then they necessarily could not progress as rapidly as they would when the sole purpose is their benefit.

It is our endeavor, especially in the senior year, to impress upon our pupils the necessity of doing work rapidly as well as accurately, and speed exercises are used for this purpose. Time cards are issued for many exercises, to foster in the apprentices the habit of working expeditiously; and the cost of materials, and the careful use of the same are also impressed upon them. This feature adds to our graduates' commercial proficiency and aids them in obtaining the good wages which they receive immediately on the completion of their course. The value then placed on them by employers is a positive indication of their efficiency as journeymen.

#### GENERAL RESULTS

Ninety-five per cent of our graduates enter at once on trade work at wages of 60 to 100 per cent of full journeymen's pay, nearly all receiving the latter in

less than twelve months. That compensation is often gained within three months after graduation, and in not a few cases, immediately.

### PRATT INSTITUTE, BROOKLYN, N. Y.

Pratt Institute was established in 1887, after many years of study and careful investigation of the subject of trade and elementary technical education by its founder, Mr. Charles Pratt, a prominent manufacturer of Brooklyn. Mr. Pratt was a self-trained man—intelligent, industrious and of wide practical experience. He wished to make the institute a school where young men and women situated as he had been could have opportunities such as he had lacked, which would be of help to them in their life work. His own personal experience inspired and guided him. He understood what young people, forced to make their own way in the world, needed, and he knew where the average school failed to give the necessary aid. He therefore was able to plan the work of the institute with an insight and a foresight that has always commanded admiration.

Mr. Pratt never lost sight of the value of machinery in practical work, but nevertheless he always put the emphasis on the value of the workman back of every piece of machinery. He saw back of the machine the man who designed it, the mechanics who made it, and even the operators who tended it. He wanted the institute to reach and help these practical workers, and his purpose was to have its courses so conducted as to increase the intelligence and the efficiency of such persons, thus doing for them what modern machinery and invention had done for those industries in which such improvement had been most extensively applied.

Pratt Institute has always held steadfast to this purpose of its founder, and its principal aim has been to promote industrial education. It offers trade and elementary technical courses during the day and night for both men and women. These courses cover a wide range of subjects in mechanical, scientific, artistic and domestic fields of occupation; and almost any young man or young woman who is ambitious for advancement can find among them opportunities for instruction and training which will increase his or her efficiency in trade or calling, or in the intelligent performance of the home duties. There are also normal courses in four departments, for the purpose of extending the ideals of the institute and of increasing its influence.

The institute opened its first classes in October, 1887, with but 12 students. Its enrollment in 1906-7 has reached a total of 3,719 persons, 2,259 being enrolled in the day classes and 1,486 in the evening classes. During these twenty years it has given training to 61,206 individuals.

### INDUSTRIAL EDUCATION FOR GIRLS

The aim in the industrial education of girls is a *double aim*, viz:

Preparation for an occupation for immediate self support, and

Preparation for home life.

These two aims must be kept in proper balance. Any system of industrial education for girls will be inadequate that does not provide for both aims.

Ability to earn money is of such prime importance to the young girl that she has little inclination for domestic life or the training which will be of vital importance to her later in her life.

Since most women who engage in wage-earning industries (as well as others) are at least potentially wives and mothers, training for house-keeping and home-management is believed to be an essential part of all their education, whether it be industrial or general.

But since a large part of the girls now leaving school at fourteen must prepare to earn their living by industry, the prime interest of the school pupil is likely to center upon training for wage earning occupations.

The vital importance of domestic education for girls does not change the fact that the progress of such education depends largely upon the sentimental attitude of young people towards this kind of work as a vocation.

A high standard of skill and knowledge of housekeeping in all its branches and details is of such far-reaching effect upon the future of any community that

every effort should be made to shape public opinion towards a true appreciation of its importance and dignity.

Women and girls are employed in mechanical occupations connected with very many industries in the country, and these occupations of women are not only affecting industry, but the standards of womanhood and the home.

It is therefore of the utmost importance that young girls who must work in shops and factories be trained for occupations which do not prevent development or incapacitate them for future mothers and home makers.

It is believed that much can be accomplished in establishing day and evening schools for domestic science by having the equipments adequately adapted to the requirements. For instance, pupils should learn cooking, housework and household management in kitchens and rooms in every respect typical of real conditions in homes of various grades of economy and incomes of various amounts. And the girl who wants to become an expert scientific cook or housekeeper should be taught with highly improved and perfected equipment.

If it should be thought by any one that the comparative importance of industrial training did not depend so much upon the *number of workers* as upon the *character* of the work itself, it would seem most reasonable to consider the scientific conditions underlying the nature of good food preparation as influencing right living and good health; also the importance of good housekeeping and wise home management as influencing thrift among our working people and good citizenship throughout the country.

The home training of girls may be accomplished in two ways:

*First.* By such specific training for this as is compatible with the trade instruction, and

*Second.* By having trade schools for specific domestic training, with courses both for pupils who may aim to make a wage-earning vocation of housekeeping in all its branches, and for those who wish to become thoroughly prepared to conduct homes of their own.

Such courses would include considerable academic and scientific schooling.

Whichever course is pursued there is sure to follow a very important reaction on the home from the added intelligence, higher ideals and greater earning capacity of the graduate of such industrial schools.

With girls, as with boys, the time in life when general education ceases to appeal to them is between the fourteenth and sixteenth years, and at these ages a large percentage of girls enter the less skilled occupations.

Girls usually remain at work from five to eight years, during which time their social scale, their standard of efficiency, and the type of their future homes are largely determined.

### MARGARET MORRISON CARNEGIE SCHOOL

The Margaret Morrison Carnegie School offers courses adapted to meet widely differing needs. These are divided into the following heads:

#### 1. Day School—

a. Regular Home Maker's Course with Technical Specialization.

b. Graduate Year for the Training of Teachers.

2. Night School—Courses for Home and Trade Use.

3. Special Subject Courses.

Although the work given under these heads varies to meet the requirements of the different courses and the needs of the students enrolled therein, the main aim and purpose of the school remains the same throughout all of the courses, namely, the development of the individuality and womanliness of the student and the utilization of her powers in the broadest possible way along the lines of her keenest interest and greatest aptitude.

### DAY SCHOOL

1. (a) In its three-year regular course the school offers a broad education, the frank purpose of which is the development of the student as a woman in such a way as to enable her to express to the full her individuality, and to give her a right point of view concerning the duties, opportunities, and responsibilities of women in the home and family, in the community, and in the State. Special emphasis is laid upon the development of the home-making arts throughout the



entire course. In the senior year the student is given an opportunity of choosing one line of technical specialization which, running parallel to the broader and more general training, should fit her to become productive as a wage earner in case of need.

Applicants under eighteen years of age, not high school graduates, are expected to have had a training equivalent to two years in high or preparatory schools.

#### NIGHT SCHOOL

The night school is primarily for students who are employed during the day, and necessarily differs from the work offered by the day school because of the brief period of time that students can give to school work and to outside study. The sessions are held from 7.30 to 9.30 p. m., on Monday, Wednesday, and Friday evenings.

The school does not attempt to develop experts, but offers to those who are gaining their livelihood by daily employment courses of instruction that will increase their efficiency, and hence their earning power.

Modern conditions require that schools of this character shall so train women apprentices that they may acquire a permanent and effective place in those social and industrial spheres to which they are best adapted. For this reason, while the work given accords with the best practical methods, the school endeavors to give to its students, in addition to actual practice, a grasp of the future possibilities in each of the subjects and to lay the foundation for individual development along the lines of these possibilities.

This system of instruction is especially helpful to those who have not had an opportunity to acquire the theoretical foundation and breadth of training necessary for intelligent practical operation. When this broader training is combined with actual practice in all branches of the subjects taught it should enable the students to advance along their chosen lines more rapidly and efficiently and finally qualify them to fill higher positions than would otherwise be open to them.

#### MANHATTAN TRADE SCHOOL FOR GIRLS, NEW YORK, N. Y.

The Manhattan Trade School for Girls was established in November, 1902. Its aim has always been to train girls who are leaving the public schools so that they can enter a trade with enough skill to make a living wage possible and enough intelligence to advance to more responsible positions. This it tries to do as quickly as the individual can progress, the length of time necessary averaging one year. The tuition is free to young girls.

New York girls can obtain good wages in dressmaking, operating, novelty work and millinery; therefore, these trades were introduced, with art and academic work to throw side lights on the trade, and a gymnasium to make a healthy worker. There has been no occasion to add other trades, but these have broadened into special lines, and the application of general principles has been varied with the changing demands of the trade. Art, first introduced as a handmaiden to trade, is developing into an independent factor. A demand is growing for girls with less training than a school of design gives to do work in copying and adapting designs.

In 1906 the school was moved into its present building, which can be adapted to accommodate 500 girls.

The Manhattan Trade School has placed girls every season for four years, with a gradual increase of wages paid at starting, and a remarkable showing of increase with experience; in special lines of work \$20 per week was attained last year. Girls placed this fall (1909) have averaged over \$5 per week for their initial wage—an increase of \$2 since 1903.

On January 1, 1907, 184 girls were in attendance. Since that time 407 girls have been admitted, making an enrollment of 591 girls during ten months.

#### THE BOSTON TRADE SCHOOL FOR GIRLS, BOSTON, MASS.

The Boston Trade School for Girls \* was founded in July, 1904. It tries to reach girls who leave the grammar school as soon as the compulsory school attendance

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\* This school ceased to exist in July, 1909, but has been re-established as part of the Boston public school system.

is completed. By training them to enter the skilled trades of dressmaking, millinery, clothing-machine operating and straw hat making it aims to keep them out of unskilled occupations, where there is no chance for advancement, and where mental, moral and physical deterioration is almost certain. Starting with a membership of 14, the school has grown to 140, and has a constant waiting list because of lack of room. Only girls who feel the need of almost immediate self support attend the school, and the course of one year is made as intensive and practical as possible.

The equipment has been sufficient to meet the demands in the most economical manner, without too greatly limiting the usefulness of the experiment. Since the introduction of electric power machinery was such a large item of expense it was thought best to provide for the possibility of growth. Thus, while an electric motor was installed of sufficient power to drive twenty machines, only ten were set up. Foot-power machines, tables, and the other articles necessary for plain sewing, dressmaking and millinery were introduced, and have been added to as the school has increased in numbers. The basement serves as a lunch room, and has been arranged to give a simple training in preparing and serving lunches. The large parlor of the house is used for daily assemblies, trade work, gymnastics and recreation during the noon recess. An attempt has been made in each department to reproduce good work-room equipment and conditions.

The school day is seven and one-half hours long (8.30 to 5 p. m.), and the school is in session throughout the year. Thirty-nine hours a week are spent at shop practice and eight and one-half hours at academic instruction. Although the work is mainly individual, and classes do not exceed 20, the per capita cost has been reduced during the past year to \$137 for the entire year of twelve months. The work made by the pupils is sold, thus giving them the benefit of actual trade practice, and at the same time enabling the school to more than cover the cost of all materials used.

The necessity of adapting the work of the school to the needs of Boston and vicinity led to the introduction of training in the trades which center about the needle and the foot and electric power machines, as these are the trades in which the greatest demand for skilled workers exist, and hence the greatest opportunities for the pupil.

The departments of the school at present are dressmaking, millinery and machine operating. In each of these departments girls are prepared to enter a variety of trades. For example, the work in dressmaking is so planned that girls may take positions as seamstresses, dressmaker's helpers, experienced skirt finishers, waist finishers or sleeve makers, according as it is possible for them to give a longer or shorter time to the training. The same is true of millinery. Girls are prepared to be frame makers, hat makers or trimmers, if special ability is shown. In machine operating a great variety of trades are open to girls, since the mastery of the electric power machine is a preparation for many specialized lines of work.

Training begins with simple processes for the control of the needle and the machine, and advances gradually to more difficult parts of the work. Instruction is individual, making it possible for a girl to progress according to her ability. The training is such as to enable a girl to enter her trade, beginning at any one of a number of kinds of work and to advance intelligently along that line. No attempt is made to produce expert dressmakers or milliners, or other trade workers, but rather to give the necessary experience, skill and speed in some of the more fundamental processes.

The object is to combine the school and the shop. The early training partakes largely of the atmosphere of the school, and is educational in character, giving reasons for processes as well as the processes themselves. The correct way of doing things is emphasized, and little attention is paid to speed.

Girls who can be recommended to positions at the end of a year are placed in establishments where there is opportunity for them to advance in both wage and position. Over 100 girls have been placed in good positions since the school opened, three years ago, and are at present receiving wages ranging from \$4 to \$20 per week.

# APPRENTICESHIP SYSTEM

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## NEW YORK CENTRAL APPRENTICESHIP SYSTEM

The New York Central Lines established in March, 1906, an apprenticeship system which includes special shop instruction carried on in the regular shop with the boy under actual shop conditions, shop discipline, and shop environment. Combined with this training he is obliged to attend educational classes during working hours while under pay. In these classes the course of study is entirely practical in character, and illustrates, explains and supplements the work in the shop by simple and direct methods suited to the needs of the apprentices.

The entire plan is arranged for the beginner who must start at the bottom. It is one designed to increase the efficiency of the rank and file of mechanics, though it is expected that exceptionally bright boys will profit most by the training offered.

This apprenticeship system, which was installed under the general direction of Mr. J. F. Deems, general superintendent of motive power, rolling stock and machinery, was described at the 1906 meeting of the American Railway Master Mechanics Association, and a very complete description of it was published in the American Engineer and Railroad Journal during June, July, September, October and November, 1907.

In brief, the apprenticeship system may be described as follows:

At each large shop on the system is a drawing instructor who has charge of the educational work. Each apprentice spends four hours a week in the class room, where mathematics and mechanical drawing is taught. These classes are held in the morning and the apprentice is under pay while attending. The apprentices while in the shop are in charge of a shop instructor who is responsible for their proper instruction in the trades and arranges for them to be moved from one class of work to another at regular intervals, thus correcting a fundamental defect in prevailing apprenticeship plans.

The work in the drawing and shop problems is outlined at the apprentice headquarters at New York City and sufficient flexibility is allowed to fit the personality of the local instructor and the needs of the local apprentices. The plan of instruction is arranged to give the closest possible connection between the work in the shop and the work in the class room. The drawing is from actual parts from the start, omitting all exercises and preliminary work as such and introducing principles only as needed to gain practical ends.

The instruction is largely individual, with classes limited to enable the instructor to give the greatest amount of personal attention to each student.

All the work that is introduced is in accordance with New York Central Lines practice, from which the illustrations are selected. Special emphasis is placed on the personal touch maintained between the instructor and the apprentices, with a view of ascertaining the kind of work or branch of service for which each boy is best fitted. At the expiration of apprenticeship those who have satisfactorily completed their term receive certificates which entitle them to preference in employment at all shops on the New York Central Lines.

It should be understood this apprenticeship system implies a full term apprenticeship, with no disposition to make any short cuts, and at the same time provides an opportunity to secure a technical education while under pay.

The boys are from the outset part of the shop organization, contributing to its output, and there is none of what is called "exercise work."

The fundamental purpose of this apprenticeship system is to provide for recruiting the ranks with skilled workmen and to improve the individual efficiency of the workmen for the benefit of the company and the workman, with the hope that those thus trained will remain as members of the permanent organization.

The results of a recent investigation undertaken by Mr. Cross, the Superintendent of Apprentices of the New York Central Lines, is of interest. It was found that 55 railroads have 7,053 apprentices in 368 plants, while 67 plants have

no apprentices. Thirteen railroads pay apprentices to attend schools; 15 make attendance compulsory, and on 13 railroads the schools are held in working hours, while in 5 the school is held in the evening.

### GENERAL ELECTRIC COMPANY

Seven years ago or more this company established an apprenticeship system based on new methods of procedure, with a view of accomplishing the very best results.

The significant feature in the General Electric Company's system is the practical training of apprentices in large "training rooms." The boys are in these rooms for two years, after which they are placed in different departments of the factory. This is considered the great point of advantage in the General Electric Works. Educational courses are provided by the company in academic branches which will assist the apprentices to obtain a better understanding of machines and machine parts, and will make them acquainted with the problems and calculations connected with the reading and comprehension of mechanical drawings, and with the sketching and designing of auxiliary tools needed in modern manufacture. The school sessions are held during the working hours, and the apprentices are paid the same wages during these hours which they would receive if they were working in the shops.

The apprenticeship school is divided into two departments, a machinery department and a pattern department. In the machinery department about ten thousand square feet of floor space is devoted to the use of the school. There are in this department between three hundred and four hundred operatives in training. The instruction is systematic and the course is four years. As soon as an apprentice masters a machine he is ready to instruct a new boy to take his place. He remains at the machine until the new boy is able to operate it, when he advances to another machine. Thus each apprentice as he masters a machine teaches his successor. The school is turning out now two graduates per week, and this number is expected to be increased in the near future to three or four.

The apprentices are paid at the rate of 9 cents per hour for the first year, 12 cents for the second year, 14 cents for the third year, and 16½ cents the fourth year. After the fourth year they are regarded as craftsmen, or skilled mechanics. Most of the graduates stay with the company after finishing their course. Some stray, but as a rule the boys prefer to remain in the service of the company.

From an economic point of view the school is virtually self-sustaining, as there is enough work that can be done by the apprentices to pay for the instruction.

A feature which belongs to the General Electric Company alone, so far as ascertained, consists in examinations in the school work, which are held frequently during the year, with a final examination at the end of the course to determine to some extent the standing of each apprentice and the wages which the company considers commensurate with his value as a journeyman.

### NEW YORK TRADE SCHOOL, NEW YORK, N. Y.

The New York Trade School was founded in 1881 by the late Col. R. T. Auchmuty. The purpose of the school was to provide young men, between the ages of 17 and 25, instruction in certain trades, and to place within the reach of young men already working at those trades the opportunity to increase their knowledge and skill.

Formerly a lad who was desirous of learning a trade was indentured for a long term of years to a master mechanic. With the progress of time, the old-style apprentice system has gradually become obsolete. The introduction of machinery and the advance in the practice and science of the trades have altered conditions to such an extent that it is no longer practicable for a master mechanic to undertake the training of an apprentice with that care and thoroughness that should result in developing the lad into a mechanic of the highest skill and intelligence.

The founder of the New York Trade School clearly saw the serious need

this problem presented, and to his foresight, personal effort and philanthropy is due the establishment of the school.

With the disappearance of the old style apprentice service a substitute best adapted to modern conditions was desirable. The founder of the school felt that the combination of the trade school and the workshop was the solution; the trade school to teach young men the use of the tools, how to do work, and the scientific principles which underlie the practical work; and the workshop to give the young man speed of execution, facility and experience.

The method of instruction used at the school is what is known as the "Auchmuty system," and was originated by the founder of the institution. For each trade taught a course of instruction is prepared, under which both the practical and theoretical branches of the trade are taught. The course of instruction specifies a series of exercises in manual work which each student of the class is required to execute and complete. At first the exercises in the course comprise work of an elementary character and are intended to make the student proficient in handling all the tools used in the trade he may be studying. When a student demonstrates that he has acquired a workmanlike manner of using his tools he is advanced to other work. Each succeeding exercise becomes more difficult and complicated, and a student rapidly acquires skill and proficiency as the course progresses. The work provided for in a course is of a thoroughly practical character, such as the student will meet with in actual practice at his trade. Mechanics of skill and experience act as instructors, and each student receives individual care and attention. In conjunction with the manual work, the theory of the trade is also taught. Under this arrangement a student not only learns how to do the work, but he understands the "why and wherefore." This scientific instruction furnishes knowledge of the trade that is of the highest value, and is imparted by means of lectures, diagrams and experiments.

Both day and evening classes are conducted. The day classes are of four months' duration, the instruction being given daily, from 8.30 a. m. to 4 p. m. A young man who possesses an aptitude for mechanics and has a good common-school education can in one term complete the course which the school provides.

The evening courses extend over a period of six months, the classes meeting three or four evenings a week for two and a half hours each evening. For the student who comes in the evening an attendance of from two to four terms is necessary to complete the full course.

The New York Trade School is neither a money-making nor a charitable institution, nor is it conducted in the interest of, or in opposition to, any organization of master or journeyman mechanics. Its scope is educational and philanthropical, purely, and its aim is to aid young men who have a desire to become tradesmen. While a charge is made for admission, the terms of tuition are merely nominal, and cover but a small part of the cost of maintaining the school. A liberal endowment which the school possesses enables it to carry out the object for which it was founded. The work done by the students is not sold, nor is the labor of the students utilized in any way for the pecuniary advantage of the school. The tuition fees for the evening classes range from \$12 to \$16, and for the day classes from \$25 to \$45 for a term. The tuition fees collected from students equal about one-third of the cost of operating the school.

#### Y. M. C. A.

#### INDUSTRIAL IMPROVEMENT CLASSES AND TRADE TRAINING CLASSES

On the North American continent, up to the month of February, 1909, there were 14,965 students enrolled in the Young Men's Christian Association evening classes in mechanical and architectural drawing, design, industrial chemistry and physics, electricity, manual training for boys, engineering, automobile operation and construction, carpentry and pattern work, forging and tool making, machine shop practice, plan reading and estimating, plumbing and surveying, printing, jewelry design, navigation, shoe pattern making, and other industrial branches. Seven hundred and thirty-one instructors are employed to teach these classes—which are mostly of the industrial improvement order, with a few trade courses. In New York City the Young Men's Christian Association industrial education departments enrolled 946 students in the industrial improvement and trade divisions, as follows: Mechanical drawing, 85; plan reading and estimating, 66; struc-

tural engineering, 25; preparatory engineering and drafting, 18; automobile school, 455; motor boating, 23; decorative design, 15; theory and practice of furnishing and decorating, 50; chemistry of fuels, paper making and leather making, 12; plumbing, 14; steam engineering, 19; textiles, 21; piano designing, 26; course of janitors and superintendents, 27; industrial design, 6; electricity, 65; sign painting and lettering, 5; ornamental iron drafting, 14. The general rule is to have not more than fifteen pupils for each instructor.

Trade and technical courses have been successfully conducted in Detroit, and a special day school at Chicago for apprentices in the building trades is another development, also a school for sheet metal apprentices at the Lupton Company, Philadelphia, and an additional industrial course at Kensington, near Philadelphia, a school for Westinghouse Air Brake apprentices at Wilmerding, Pa., and one for the employes of the Bell Telephone Company at Salt Lake City. Another undertaking has been the re-organization of the large boys' club at New Haven, Conn., where about 250 boys have been enrolled in carpentry, electricity, mechanical and free hand drawing, arts and crafts, sign painting and boiler firing classes. In addition to these, classes for apprentices with definite trade instructions, have been established at Worcester, Mass.; Buffalo, N. Y.; Cleveland, Scranton, Dayton, Columbus, Racine, Spokane, Grand Rapids, St. Louis, Cincinnati, Portland, Seattle, Los Angeles, Indianapolis, Milwaukee, and in Boston and many other points in New England.

## **FEDERAL GOVERNMENT SCHOOLS**

### **All Grades of Industrial and Technical Education Aided by the Federal Grants**

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Not only have the Federal grants been devoted, in part, to the sub-industrial, or sub-vocational branches, as manual training and domestic science—as noted above—and for the promotion of higher technical and scientific work in colleges (and the lesser training schools for Army and Navy), but the Federal educational grants have been and now are largely used for trade school work, industrial improvement schools and agriculture improvement schools (short courses) the most elementary of the strictly vocational work. The sixteen schools for negroes, which receive a share of the Federal grants for agriculture and the mechanic arts, having important trade school, industrial improvement and agricultural improvement divisions. The trades taught (in the trade school divisions) include: Carpentry, blacksmithing, wheel-wrighting, shoemaking, brick masonry, stone masonry, broommaking, chair bottoming, tailoring, millinery, cooking, laundering, printing, machine shop work, sewing, cabinet making, stationary engineering, dressmaking, painting, tinsmithing, electrical work, plastering, paperhanging, upholstering, saddlery, harness making, sawmilling, plumbing, steam fitting, carriage trimming, frescoing, besides elementary horticulture, apiculture, dairying, poultry raising, animal husbandry, farming, gardening, housekeeping and nursing. In connection with the agricultural and mechanical colleges for whites (or in the corresponding university departments), the trades are often taught either in affiliation with the preparatory departments, or, as in a few States (where the entrance requirements are low, or supplemental courses are offered), in the college itself. Work offered to special students is often of the industrial improvement school type. As for the “short courses”—given in connection with quite all of the Morrill-aid schools—they are most successful in attracting students as agricultural improvement schools (“short courses in agriculture”), although as day industrial improvement schools (i. e., some of the “short courses in mechanic arts”) they are also effective. Certain of the short courses are of high technical grade, but the great usefulness of this important type of training lies in its ability to reach the masses with the more elemental and strictly vocational instruction. Especially is this true of the agricultural branches, for the agricultural colleges, it is well known, have not succeeded in training a large percentage of farmers. In the college courses of the fifty Morrill schools for whites, for example, only one student in nine is enrolled in agriculture. There are over four students in mechanical engineering alone for every three in agriculture; four in civil engineering to every three in agriculture, not to mention other departments. The fact is that the country boys and girls drop out of the public schools early, just as the city children leave school permanently in large numbers during the fifth or sixth years of the course. The agricultural improvement school (short course) is to be their salvation, vocationally—and the counterpart of the industrial improvement school for the workers in the factory and shop industries and the building trades. But as yet properly constructed text-books are wanting in many departments of the “short course” educational field.

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### **THE DEPARTMENT OF THE INTERIOR**

The most important work in industrial education that is performed under the auspices of the Secretary of the Interior is that of the Indian schools—under the Commissioner of Indian Affairs. Industrial and manual training in the Indian schools may be briefly summed up as follows:

Indian schools are maintained as regular public schools (sharing in State funds), as private schools (nearly all of these are mission or denominational

schools—some of them with contracts from the Government), or as Government (Federal) schools. The Government schools are of three (perhaps four) classes: (1) Non-reservation boarding schools (Carlisle, Pa., and Haskell Institute, at Lawrence, Kans., are the chief examples); (2) reservation boarding schools (that at Fort Totten, N. Dak., is the largest); (3) Government day schools; (4) Hampton Institute—a private corporation, receiving Federal aid. The schools not controlled or aided by the Federal Government do the least, on the whole, in the way of industrial or manual training. The Government day schools do something in manual training instruction, and the reservation boarding schools sometimes offer trade courses. The highest type of industrial work is found at the Hampton (Va.), and Carlisle (Pa.—non-reservation), schools. Most successful, everywhere, has been the instruction in agriculture, and in cooking, sewing, and other household subjects, but native arts and crafts, weaving, pottery, lace making, basketry, poultry raising, butter making, laundering, printing and bee culture are branches often taught in the Indian schools. At Hampton (also for colored) a great variety of trades may be found. Carlisle (not far from Harrisburg, Pa.) has students in carpentry, blacksmithing, carriage and wagon making, coach painting and trimming, painting, plumbing and steamfitting, tailoring, harness making, shoe making, plastering, masonry, bricklaying and cementing, tinshop work, printing, photography, baking, cooking, agriculture, laundering, horticulture and green house work, poultry raising and dairying. The work is practical. The fifty boys in carpentry (from twelve to twenty-one years of age), for example, work on actual construction at the school and on repairing; the tailoring students make uniforms for the school, also working clothes and civilian suits. A superintendent of Indian schools—under the Commissioner of Indian Affairs, Department of the Interior, Washington, D. C.—has general supervision of the governmental institutions. The schools are found in a score of the States and Territories. The annual appropriation of the Federal Government is nearly \$4,500,000.

### THE UNITED STATES NAVY ELECTRICAL SCHOOL

The United States Navy Electrical School is located at the Navy Yard, New York, and is maintained by the Government for the purpose of training men to manipulate and care for the many types of electrical machines and apparatus, including wireless telegraphy, used for the various purposes on board of a modern ship. This school has enrolled 245 students in these courses.

There is also an electrical school at the Navy Yard, Mare Island, Cal., where the course of instruction is, in general, similar to that at New York, described herein.

The students of these schools are regularly enlisted men, and the term of enlistment is four years. Candidates must be American citizens and must be able to pass a physical and a technical examination.

Electricians are enlisted as "electricians third class" with a salary of \$33 per month, the age limits for this grade being from 21 to 35.

In special cases, men between eighteen and twenty-five years of age who are skilled mechanics with some knowledge of electricity, or students of electricity who show aptitude for the naval service, may be enlisted as landsman (for electrician) at the discretion of the recruiting officer. In every instance the applicant must have sufficient education in the common school branches or experience in, or study of, electricity, to furnish a good groundwork for instruction in the school. The pay while in this rating is \$17.60 a month, with the same allowance as other enlisted men receive. They will be advanced to electrician third class as soon as they qualify after examination at the school.

Every person upon enlisting is provided by the Government with an outfit of clothing amounting in value to \$60. There are no expenses for board, lodging and medical attendance while in the service, and the only necessary expense incurred by enlisted men are for the renewal of such articles of clothing as may be worn out from time to time. Thus it is seen that a thrifty person may save quite a little money even at the lowest grade.

After enlisting, electricians are sent to the school, transportation being furnished by the Government, where they are thoroughly instructed in the use of electrical appliances and the arts of wireless telegraphy and telephony. The men are furnished with books and all apparatus used and there are no expenses incident to the course.



The work shop is completely equipped with modern dynamos, motors and electric apparatus and the wireless telegraphy rooms with the various types of instruments, including the wireless telephone.

Men who leave the school as electricians third class may be given acting appointments as electricians second class if such appointments are recommended by a board of one or more officers, as a result of an examination in general electricity and wireless telegraphy, as applied to vessels of the Navy. The examination must show that the applicant for the higher rating is qualified to stand a watch in charge of the dynamo room and to send and receive wireless messages at the normal rate.

Electricians second class must serve at least one year satisfactorily in that rating before becoming eligible for advancement, unless they receive advancement through unusual proficiency at the school. After one year of such service they may be promoted to electrician first class if vacancies in complement exist.

Similarly, electricians first class must serve satisfactorily one year before becoming eligible for advancement to chief electrician, the pay of which is \$66 a month. Chief electricians, after having served one year satisfactorily on board a sea-going ship, are eligible for permanent appointment, in which the pay is increased to \$77 a month.

Electricians, as well as all other enlisted men of the Navy, are dependent for promotion, to a certain extent, on the existence of vacancies in the higher ratings in the ship to which they may be attached.

The course of instruction is thoroughly practical and all that is latest and up-to-date in electricity, as used on board ship, is taught. The instruction is individual, every assistance is given by competent instructors, and the *student's progress depends upon himself*.

After a course of five months electricians third class, who are found proficient, are promoted to the grade of electrician second class, at a salary of \$44 per month; and in case of unusual proficiency, to the grade of electrician first class, at \$55 per month.

In like manner "landsmen (for electrician)" are promoted one or two grades according to their proficiency.

The home of the students is on board the receiving ship, where they have their mess and keep their clothes, and where there is an excellent library which affords facilities for study and pleasure reading.

After leaving the school electricians are sent either to cruising ships or wireless telegraph stations on shore, part of their enlistment frequently being spent in both places.

All electricians are petty officers; chief electricians are chief petty officers, and hold a very desirable position.

At the expiration of four years electricians are discharged from the Navy, and if they re-enlist within four months of the date of honorable discharge they are given upon re-enlisting four months' pay, whether they remain out of the service one day or four months. They also receive, in addition to the pay of their grade, \$6.36 a month for the first re-enlistment and an additional \$4.36 a month for each re-enlistment thereafter.

In addition to the school for electricians there are schools for artificers, cooks and bakers and machinists.

# PRESENT INDUSTRIAL EDUCATIONAL ENACTMENTS

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## CONNECTICUT

The early interest of Connecticut in State-authorized industrial education is shown by the approval, on June 3, 1903, of an act which runs as follows:

"Resolved, By this Assembly: SECTION 1. That the governor be, and is hereby, directed to appoint a commission consisting of three persons, whose duty it shall be to investigate practical means and methods of industrial and technical education.

"Sec. 2. Said commission shall, on or before February 1, 1906, report to the General Assembly at its sessions to be held in 1905, and shall make such recommendations for legislation as it may deem wise.

"Sec. 3. No member of said commission shall receive any compensation for services as such member, but the commission may expend a sum not exceeding \$500 for incidental and necessary expenses incurred in the discharge of its duties, and said sum shall be paid by the Treasurer upon the order of the comptroller, with whom the commission shall file proper receipts and vouchers."

In January, 1907, Senator Luther, President of Trinity College, introduced a trade school bill in the Connecticut legislature. This bill was thoroughly discussed in the press by various organizations, and a hearing was held before the Committee on Education on March 1, 1907.

On July 12, 1907, the appropriation committee presented a substitute bill. This bill, entitled "An Act concerning the establishment of free public schools for instruction in the principles and practices of trades," was enacted and became a law as chapter 250 of the Public Acts of 1907.

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## GEORGIA

The Georgia legislature of 1906 passed an act for the organization of 11 district agricultural schools. In the spring of 1907 it was stated that the appropriation for these schools would amount to about \$3,000 for each school.

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## MARYLAND

The Maryland legislature of 1908 authorized the governor to appoint a commission to recommend legislation on industrial education. This commission held its meeting of organization at Baltimore, on June 20. Dr. Richard Grady, of Annapolis, was appointed as permanent chairman, and Mr. Carroll Edgar, of Elkton, was made secretary. The other members are Howard Melvin, John T. Foley, and Larrie C. Quinn. The commission will make an inquiry into the whole subject of industrial education in Maryland, and make a report upon it. It will examine into the extent to which industrial education is carried on in Maryland and elsewhere.

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## MICHIGAN

In the Michigan legislature of 1907, a bill to provide for the establishment of county schools of agriculture, manual training and domestic economy, was enacted. In substance it authorizes the board of supervisors of any county to appropriate money for the organization, equipment and maintenance of a county school of agriculture and domestic economy. Two or more counties may unite in establishing such schools. Upon the decision of two-thirds of the board of supervisors to establish such a school, the question of establishment shall be put to the vote of the electors of the county,

A separate county school board of five members shall have control of the

organization, equipment and maintenance of such schools. The county commissioner of schools is one of the members, and the other four are to be elected by the board of supervisors for one, two, three and four years, one old member dropping out and one new being added each year. Where two or more counties combine, a portion of the board shall be selected from each county, and necessary levies of money shall be apportioned to each county in proportion to the assessed valuation.

The required courses of study include the soil, plant life and the animal life of the farm; farm accounts; manual training, and domestic economy. Not less than ten acres of land must be connected with the school for experiment and demonstration purposes. Tuition is free to inhabitants of the county or counties contributing to the support of the school. Provision is made for the classes for advanced students during the winter months. The superintendent of such a school must be a graduate of a State College of Agriculture.

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### MISSISSIPPI

The Mississippi legislature passed an act which was approved March 21, 1908, authorizing the establishment of a county agriculture high school for white youth in each county, such school to be under a board of five trustees, one of whom shall be the county superintendent of schools, two to be appointed by the board of supervisors and two by the county school board. A tax not exceeding two mills may be levied for the support of the school unless the majority of qualified voters object to such levy. If certain definite provisions regarding the establishment and maintenance of the school are complied with to the satisfaction of the State Board of Education, a grant of \$1,000 per year may be received from the State.

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### NEW JERSEY

In the New Jersey Senate, March 10, 1908, there was introduced by Mr. Colby a joint resolution authorizing the governor to appoint a commission to inquire into the subject of industrial education, and report thereon to the next legislature. The five persons composing the commission are to serve without compensation, but may employ a secretary and other necessary clerical assistance. The commission's expenses must not exceed \$5,000.

A bill was introduced in the house, March 31, 1908, looking to the establishment of industrial schools in the larger cities of the State. The bill authorized the governor to appoint a commission of five persons, without salary, to consider the advisability of establishing such schools, to be maintained by the State in first and second class cities. This bill was passed by the legislature of 1908.

The commission has reported to the governor, recommending the appointment of a State commission on industrial education, with authority to establish independent industrial schools.

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### NEW YORK

A bill for industrial education was signed by Governor Hughes, May 18, 1908. The measure provides for the establishment by local boards of education of general industrial schools, open to pupils who have completed the elementary school course or have attained the age of fourteen, and of trade schools open to pupils who are eighteen years old and have completed either the elementary school course or a course in the industrial school, or who have met such other requirements as the local board may prescribe.

Local authorities are authorized to appoint an advisory board of five members, representing the local trades and industries, two of the members for a term of one year and three for a term of two years, their successors to be appointed for a full term of two years. These local boards are authorized to employ competent teachers for the trade and industrial schools, to provide proper courses of study, to purchase grounds and lease or construct suitable buildings, and to purchase necessary machinery, tools, apparatus and supplies. For each independently

organized industrial trade school the State is to appropriate \$500 each year where one teacher is employed and where there is an enrollment of at least 25 pupils, and an extra \$200 for each additional teacher employed exclusively in such schools.

In complying with the requirements of this law, a new division in the education department, called the division of trades schools, has been organized, and to it have been assigned the duties incident to the establishment, organization and management of these factory and trades schools. It is suggested that boards of education advise with local commercial and labor organizations, and invite expressions from the press and citizens; and that where a real demand appears for training in general shop work or in any particular trade, steps be taken to meet it. When this time comes at any point in the State, the education department, through the chief of the division of trades schools, will be ready to be of service.

On September 10, 1908, the education department of New York State issued a circular, announcing that through the organization of a new division of trade schools the education department was prepared to take up the organization of factory and trade schools with local school authorities, commercial or labor organizations, or any other citizens who may be interested.

A circular of information was issued from Albany, N. Y., October 1, 1908, for the purpose of anticipating some of the questions which will arise in reference to the recent law providing for the establishment and maintenance of general industrial and trades schools.

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### WISCONSIN

An industrial school bill was enacted by the Wisconsin Assembly of 1907. This act provided that any city or school district in the State of Wisconsin should have the power to establish, conduct and maintain a school or schools for the purpose of giving practical instruction in trades to persons having reached the age of sixteen, such schools to form part of the public school system of such city, and to be under the supervision and control of the respective school boards; but after the establishment of such schools each school board may appoint an advisory committee on trade schools, which shall consist of five citizens not members of the school board, but each of whom is experienced in one or more of the trades taught in the school.

The funds for such industrial schools are to be raised by a tax not exceeding one-half mill on the total assessed valuation of the city. Provision is made for the temporary use of the regular school funds for industrial school purposes, reimbursement to be made from the industrial school fund when it shall have become available. A check on the introduction of an industrial school by the school board against the wishes of the community is maintained by the provision that the matter may be submitted to a vote of the electors of the school district upon petition of 20 per cent of the voters at the previous election.

An important provision of this bill is the permission to take over trade schools already established, thus following in the steps of European countries, where in many cases the schools taken over have formed the nucleus for the new State system.

As a result of this law, and in accordance with the last mentioned provision, the Milwaukee School of Trades became the first day trade school to be operated under a State industrial school law.

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### MASSACHUSETTS

Appointed August 31, 1906. Term of office, three years. Section 2, of chapter 505 of the Acts of 1905:

"The commission on industrial education shall be charged with the duty of extending the investigation of methods of industrial training and of local needs, and it shall advise and aid in the introduction of industrial education in the independent schools, as hereinafter provided; and it shall provide for lectures on the importance of industrial education and kindred subjects, and visit and report upon all special schools in which such education is carried on. It may initiate and superintend the establishment and maintenance of industrial schools for boys and girls in various centers of the Commonwealth, with the co-operation and consent

of the municipality involved or the municipalities constituent of any district to be formed by the union of towns and cities as hereinafter provided. The commission shall have all necessary powers in the conduct and maintenance of industrial schools, and money appropriated by the State and municipality for their maintenance shall be expended under its direction."

Section 6, of chapter 505, of the Acts of 1906:

"\* \* \* and especially shall the commission consider and report at an early day upon the advisability of establishing one or more technical schools or industrial colleges, providing for a three or four years' course for extended training in the working principles of the larger industries of the Commonwealth."

Industrial schools to be provided to which pupils are to be admitted at fourteen years of age, the course to be four years, combining technical instruction and practical shop work.

Evening courses to be provided for men and women already in the trades.

Efforts to be made to establish in the day schools part time courses for apprentices between the ages of fourteen and eighteen years.

Agricultural schools to be provided.

Further delegation to the commission of necessary powers in the conduct and maintenance of independent industrial schools.

Moneys appropriated for the maintenance of independent industrial schools, whether appropriated by the State or by municipalities, must be expended under the direction or with the approval of the commission.

Permission extended to any city or town to establish independent industrial schools in charge of a board of trustees, and the empowering of such a board with authority to provide and maintain such schools.

Such schools must be approved by the commission as to location, courses and methods of instruction, in order to receive State aid, as provided in chapter 505 of the Acts of 1906.

The commission may grant permission to any resident of Massachusetts to attend an authorized independent industrial school in any other city or town than that of his residence, provided that his own town does not maintain such a school in whole or in part.

The commission may affix a tuition fee which the home town is required to pay in case of pupils resident in outside towns, the State to repay to the town one-half the tuition fee so paid.

## OHIO

"An Act to authorize boards of education in cities of the second grade of the first class to levy a tax for certain purposes therein specified." Approved March 16, 1909.

*"Be it enacted by the General Assembly of the State of Ohio:*

"SECTION 1. Any board of education may establish and maintain manual training, domestic science, and commercial department; agricultural, industrial, vocational and trades schools; and kindergartens in connection with the public school system; and pay the expenses of establishing and maintaining said schools from the public school funds, in the same manner and from the same funds as other school expenses are paid."

## OKLAHOMA

### STATE COMMISSION FOR AGRICULTURAL AND INDUSTRIAL EDUCATION

In order to carry out the provisions of the State constitution relating to the teaching of the elements of agriculture, horticulture, stock feeding and domestic science in the common schools of the State, a "State Commission for Agricultural and Industrial Education" was created by the legislature of 1908 (the Franklin Act, approved May 20). It consists of the State Superintendent of Public Instruction, chairman; the President of the State Board of Agriculture and the President of the Agricultural and Mechanical College. The commissioners serve without additional pay. An annual report to the Government is required. After July 1, 1909, no person is to be allowed to teach in the public schools of the State

who has not passed a satisfactory examination in the elements of agriculture and allied branches, as required by the paragraph cited as above. In each of the State normal schools a department to be known as the "Department of Agricultural and Industrial Education" is established, and a yearly appropriation of \$2,500 ("or as much thereof as may be necessary") out of the State treasury is made to each of the State normal schools for the maintenance of this department. The Agricultural and Mechanical College is designated by law "the head of the agricultural, industrial and allied science system of education." The "Chair of Agriculture for Schools" is created in the Agricultural and Mechanical College. The duty of the incumbent is "to direct and advise in all matters relating to the teaching of agriculture and allied subjects in the common schools, under the supervision of the President of the Agricultural and Mechanical College." He is to visit normals, institutes and public schools, and prepare, print and distribute such leaflets and other literature as may be helpful to teachers. Graduates of the four-year course in the Agricultural and Mechanical College are granted a permanent teacher's certificate of first grade by the State Superintendent of Public Instruction when application is approved by the Commission for Agricultural and Industrial Education.

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## PROPOSED LEGISLATION

### THE DAVIS BILL

An extension of the system of Federal aid to industrial education in the direction of greatest present need—i. e., the secondary instruction—is proposed by the Davis bill, now before Congress. Under the head of secondary schools it would provide not only for Federal support to manual training and domestic science in high schools, but also for the similar endowment of industrial and agricultural improvement schools (evening or day). State normal schools would receive Federal aid for the training of teachers of manual training, domestic science, and the elements of agriculture—just as the land-grant colleges now receive Federal aid which may be devoted to departments for the training of teachers of industrial education. The total amount to be appropriated annually, under the terms of the proposed bill, is something over \$11,000,000.

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### NEW JERSEY

The general supervision and control of public industrial education shall be vested in a Commission on Industrial Education, which shall consist of five citizens of this State, at least three of whom shall be engaged in industrial pursuits. The members of the commission shall be appointed by the governor within thirty days after the approval of this act, and those first appointed shall serve for one, two, three, four and five years, respectively. The governor shall be ex-officio a member of the commission.

Whenever any board of education, school committee or other like body of any municipality in this State, or the Commission on Industrial Education, shall certify, or shall have heretofore certified to the governor that a sum of money not less than one thousand dollars has been contributed by voluntary subscriptions of citizens or otherwise, as hereinafter authorized, for the establishment in any such municipality of a school or schools for industrial education, it shall be the duty of the governor to cause to be drawn, by warrant of the comptroller, by himself, out of any moneys in the State Treasury not otherwise appropriated, an amount equal to that contributed to the particular municipality as aforesaid for the said object, and when any such school or schools shall have been established in any municipality as aforesaid, there shall be annually contributed thereafter by the State, in manner aforesaid, for the maintenance and support thereof, a sum of money equal to that contributed each year in said municipality for such purpose: *Provided, however*, That the moneys contributed by the State as aforesaid to any municipality shall not exceed the sum of seven thousand dollars.

## NEW YORK

IN ASSEMBLY, JANUARY 20, 1909

**AN ACT** to authorize the appointment of a commission to inquire into the educational system of the State, as to the establishment of industrial and technical schools.

The people of the State of New York, represented in Senate and Assembly, do enact as follows:

**SECTION 1.** Within thirty days after this act takes effect the governor shall appoint a commission consisting of seven persons, to be known as the commission on technical and industrial education, which shall inquire into the educational system relative to the establishment of technical and industrial schools throughout the State.

**SEC. 2.** The commission shall be charged with the duty of investigating methods of technical and industrial training in the public schools of the United States and foreign countries with a view to establishing such schools and special courses of study in the public schools of this State. The commission shall submit a report to the legislature of 1910, and shall, in its discretion, make such recommendations as to proper legislation which it may deem advisable.

**SEC. 3.** Within ten days after the commission shall have been appointed its members shall meet and organize by the election from their number of a chairman and secretary; and may in and for the performance of its duties employ clerks, stenographers, and other persons as may be deemed necessary, and fix their compensation.

**SEC. 4.** The sum of seven thousand five hundred dollars (\$7,500), or so much thereof as may be necessary, is hereby appropriated out of any moneys of the treasury not otherwise appropriated, to be paid by the State Treasurer on the order and warrant of the comptroller, to carry out the purpose of this act.

**SEC. 5.** This act shall take effect immediately.

## ILLINOIS

No legislation has as yet been enacted in Illinois bearing directly upon State industrial education. A communication from the Department of Public Instruction of Illinois, under date of October 5, 1908, states that an education commission has been authorized by the legislature and is now at work on the real organization of the Illinois school system. It is expected that it will bring in a report upon industrial and vocational education.

Industrial school legislation for a special district in the State has been enacted for Chicago, which gives the Board of Education power to provide for the establishment and maintenance of various kinds of schools, and which includes schools or classes in manual training, constructural and avocational teaching, and domestic arts.

## TENNESSEE

In Memphis, Tennessee, a Citizens Industrial Educational Club has been organized, not only for the purpose of securing local industrial school facilities, but also for promoting State industrial education legislation. This club, which now numbers several hundred members, called a mass meeting, which was held October 23, 1908, in the Assembly Hall of the Business Men's Club. At this meeting the mayor of the city, who presided, stated the needs of the city for an industrial school and outlined a brief plan for procuring funds to start operations.

A published account of the work in Memphis says, "The work of procuring funds for the industrial school has had an auspicious beginning; as the people of this city are heart and soul in the movement, it is almost certain that the next legislature will provide for the institution."

### VERMONT

Much interest has been aroused in Vermont in the subject of industrial education, and it is expected during the biennial session of the General Assembly of the State, which met early in October, some measures relative to industrial education will be passed.

The legislative committee of the Vermont State Grange has recommended that the legislature be urged to pass a law relative to the introduction of agricultural and industrial training in the public schools. This committee recommends the teaching in the public schools of the elements of agricultural science and the gradual introduction of instruction in the common industrial occupations.

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The movement toward industrial education has become very active, and similar measures have been introduced in various other States, with a probability of increased interest in the States already mentioned.

A reorganization and centralization of educational interests have been effected in the State of Massachusetts during the year.

A bill to inquire into and effect a reorganization of the system of education of Pennsylvania failed to pass at the last session of the legislature, but it is expected to have greater support during the coming year.



# **ATTITUDE OF THE EMPLOYERS**

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**JAMES W. VAN CLEAVE**

**EX-PRESIDENT OF THE NATIONAL ASSOCIATION OF MANUFACTURERS, PRESENTS VIEW ON INDUSTRIAL EDUCATION**

I would attach a manual training department to every public primary school in the United States, where, beginning at the age of 9 or 10, under competent teachers, boys could devote an hour a day to the handling of tools. I would make the instruction compulsory. Thus at the age of 14 the boy of average intelligence and application would be able to use many of the tools employed in those trades which are fundamental and important. Then I would have free industrial high schools where boys who had completed the primary course might continue their education. Two years at such a school would qualify a student to take his place in the world as a first-rate mechanic. The supply of workers being certain and adequate, the labor union embargo on our industries would soon be permanently lifted.

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## **AMERICAN FOUNDRYMEN'S ASSOCIATION**

**FROM REPORT OF COMMITTEE ON INDUSTRIAL EDUCATION**

Your committee has considered it a duty to call attention to this social side of the problem of industrial education because this education involves the question of bread and butter, shelter and clothing, of public peace and order, and the attributes of civilized life for the manufacturer, the business man and railroad officer as much as it does for the mechanic and laborer. Industrial education, to be of nationally constructive and lasting productive value, must go farther than merely trying to serve one particular industry, it must go farther than trying to serve the mechanical needs only of all industries; it must try to serve the social needs of society by raising the man and citizen to as high an intellectual standard as we try to raise the mechanic to a higher level of skill. Then the harmonious development of both will produce that degree of industrial intelligence which must give us the fifth essential to successful productivity of capital and labor: viz, health, energy, intelligence, co-operative spirit and earning capacity.

To attain this end we can have nothing less than a system of industrial continuation schools, branching off from the seventh or eighth grade, serving general industrial purposes up to sixteen years of age, and then becoming specified trade schools as instructors to those engaged in trades, similar to what the New York law contemplates. These schools to be supported by both the State and the community, making attendance compulsory up to fifteen years of age, and the employer recognizing the increased intelligence by a better wage, which will induce parents to send their children to school instead of to the factory.

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## **THE MACHINE TOOL BUILDERS' ASSOCIATION**

The action of the National Machine Tool Builders' Association in declaring for a double-barrelled apprenticeship system is obvious to the casual observer.

"The length of the general apprenticeship is to be three years, the wages paid being 8, 10, and 13 cents per hour. The special apprenticeships are to be shorter, and the rates higher. Thus, for turning and planing the course is to cover two years, the rate of wages advancing each six months, and being 12, 14, 16 and 18 cents. For the vertical and horizontal boring mill the term is to be 1½ years, the rate advancing at the end of each six months, and being 15, 17 and 20 cents. In the case of drilling and milling, the term is to comprise a single year only.

"This special apprenticeship system has been found feasible to train very efficient men and to largely increase their earning capacity in a brief period of time.

Some of those taken in have been beyond the usual age of apprenticeship, the applicants being men of natural ability, but working as laborers only, and a good proportion of them have increased their earning capacity threefold. In other cases it has been possible to obtain farmers' sons who were unable to take the general course, because of the lower wages, but who, by reason of the self-sustaining wages offered at the beginning of the special courses, have been able to take those courses and have done so. The report provides for the transfer of an apprentice from the special to the general class, with suitable credit for the time served."

### NATIONAL ASSOCIATION OF MANUFACTURERS REPORT OF COMMITTEE ON INDUSTRIAL EDUCATION

In a report to the National Association of Manufacturers a committee on industrial education severely arraigns the attitude of labor unions toward the schools. The report said that the encouraging progress had been made in establishing industrial institutions throughout the country, but that the unions had made efforts to hinder the perpetuation of the trade school. "Their efforts," the report says, "are nothing short of a crime perpetuated against all those young men who desire to learn a trade and are cause, in a considerable measure, of the lack of skilled labor in the United States."

The problem of teaching boys and girls a trade will probably never be solved by the modern free industrial school quite as satisfactorily as it is solved in the trade school that has been successfully conducted in New York for upward of 15 years as a private enterprise, and where thoroughness is made a condition of graduation and is never lost sight of. The modern apprentice system is generally acknowledged as a failure in that boys who are entered in a trade seldom have the opportunity to become efficient in the time specified as necessary for the apprenticeship term. The skilled workers are kept too busy in the short work day in order to attain the limit of a day's production, and necessarily the boy must be neglected.

Since the existing conditions in the trades will probably be productive of a lack of skilled workers in the United States it would appear that there is a great opportunity ahead for the industrial school and that a wide discussion of the questions involved may bring about an understanding between the skilled worker and the school graduate which will not be harmful to the former and prove beneficial to the latter.

### ABSTRACT FROM INDENTURE USED BY ONE OF THE LARGEST MANUFACTURING CONCERNS IN THE COUNTRY

The said masters reserving the right to terminate this agreement, if said apprentice shall refuse to obey their proper commands, or shall be found physically unable to attend to his work. During all which time the said apprentice doth covenant and promise that he will serve his masters faithfully, keep their secrets and obey their lawful commands; that he will do them no damage himself, nor see it done by others without giving them notice thereof; that he will not waste their goods nor lend them unlawfully; that he will not contract matrimony within the said term; that he will not play at cards, dice, or any other unlawful game, whereby his masters may be injured; that he will neither buy nor sell, with his own goods nor the goods of others, without license from his masters; and that he will not absent himself day or night from his masters' service without their leave, nor haunt ale houses, taverns, or play houses, but in all things behave himself as a faithful apprentice ought to do during the said term. He shall conform to and abide by all rules and regulations now in force and hereinafter adopted by his masters for the government of their apprentices. And the said masters on their part do covenant and promise that they will use the utmost of their endeavors to teach, or cause to be taught or instructed, the said apprentice in the art, trade, or mystery of..... and he shall receive as compensation, when working, two dollars (\$2.00) per week.

It appearing upon satisfactory proof furnished to said..... that said minor has been properly educated in reading, writing, and arithmetic, so as to render further schooling unnecessary.

And for the true performance of all and singular the covenants and agree-

ments aforesaid, the said parties bind themselves each unto the other firmly by these presents.

This agreement terminated October, 1903. The above agreement is literally and accurately quoted from the original, the name of the firm and of the apprentice, for obvious reasons, being omitted.

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### NATIONAL EDUCATIONAL ASSOCIATION, BOSTON, 1903

#### FROM AN ADDRESS OF ONE OF MASSACHUSETTS' PROMINENT MANUFACTURERS AND FOR TWENTY-FIVE YEARS A FOREMOST EDUCATOR

\* \* \* \* \*

"The specific needs regarding the education and qualifications of workmen are as follows: First, last, and always, we are looking for effective, productive, profitable skill. The manufacturer will employ the skillful man at good pay, even if he be untidy, coarse, ignorant, profane, and drunk on Sundays." (P. 598.)

\* \* \* \* \*

"This brings us to the consideration of education that will, if possible, meet the requirements of the manufacturer—a system which shall retain the excellent features of the various schools referred to and shall give an earnest boy who has completed the grammar grades a good liberal education, and at the same time a thorough training for the trade, from which he can immediately upon graduation earn a good living at journeymen's pay, say \$2 a day." (P. 600.)

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#### ABSTRACT FROM SPEECH OF ONE OF THE LARGEST MANUFACTURERS OF THE NEW ENGLAND STATES

[From Fitchburg Daily Sentinel, January 7, 1907.]

"Then Mr. ——— went on to say: 'To establish a training shop for apprentices, I would incorporate a stock company, with the expectation that the stock would be taken and held by the business men and manufacturers of the city, the capital to be invested in buildings and equipment for a training shop for a considerable number of boys to learn the all-around trades of the machinist, the patternmaker, toolmaker and molder.'"

\* \* \* \* \*

"The products of the training shop would be sold in the open market at full prices for such superior machine shop products.'"

## ATTITUDE OF ORGANIZED LABOR ABROAD

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### GREAT BRITAIN

The Trade Union Congress, at its 1907 Congress of Trades, adopted the following resolution:

"This Congress urges the organized workers to continue their efforts to secure parliamentary and municipal recognition of the trade union education policy, which demands as essential to the well-being of our future citizens—

"(1) The State maintenance of school children.

"(2) Scientific physical education, with medical inspection and records of the physical development of all children attending State schools, and skilled medical attendance for any child requiring same.

\* \* \* \* \*

"(4) A national system of education under full popular control, free and secular, from the primary school to the university.

"(5) That secondary and technical education be an essential part of every child's education, and secured by such an extension of the scholarship system as will place a maintenance scholarship within the reach of every child, and thus make it possible for all children to be full-time day pupils up to the age of sixteen.

"(6) That the best intellectual and technical training be provided for the teachers of the children, and that each educational district shall be required to train the number of pupil teachers demanded by local needs, and for this purpose to establish training colleges, preferably in connection with universities or university colleges; the cost of such training to be met by adequate grants from the national exchequer.

"(7) That the cost of education shall be met by grants from the Imperial exchequer and by the restoration of misappropriated educational endowments.

"(8) That it be an instruction to the Parliamentary Committee of the Trades Union Congress to formulate these proposals in a bill to be laid before Parliament during the forthcoming session."

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### GERMANY

The chairman of the General Commission of Trade Unions of Germany has kindly furnished much valuable information regarding the development of industrial schools, and the benefits to be derived from them by the working men of Germany.

It is the belief of those interested in labor organizations that the schools are of great benefit to the working classes, and that the greater proportion of the graduates of these schools become members of the several trade unions. They are considered, too, the very best members of these unions, as well as the most efficient workmen. The union leaders are also loud in their praise of the supervision of the schools, since they are conducted in the interest of the employed as well as of the employer. They are, however, unlike the French schools in so far as advisory and visiting members of trade unions are concerned. In the judgment of trade union leaders, it is entirely unnecessary for them to have such members, as the law regarding courses of studies and attendance is very specific, and is adhered to in the very strictest way.

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### BELGIUM

At a convention of trade union syndicates from all parts of Belgium, held in Brussels in April, 1907, a committee was appointed to visit and inspect these

schools. Upon its report to the convention, resolutions were adopted expressing approval of the institution, and the belief that such schools would produce workmen of more intelligence than those trained in the ordinary way; and requesting that they be informed when students were ready to qualify as graduates, that they might assist in placing them as apprentices and secure their membership in their unions.

The entire scheme seemed to have made a great impression on the members of the convention, particularly the provisions for the health and comfort of the students, and the desire to dignify labor and raise it to a standard never before attempted in Belgium.

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### FRANCE

The general secretary of the Machinists' Union, in speaking of the schools, said:

"There was a time when trade unions were opposed to the schools. That opposition, however, came from a misunderstanding of their intended scope. It has been totally effaced, and now we look upon the schools and instructors as our best friends, and the graduates as the greatest assets of our trade unions, since they enable us to select from our ranks the best artisans obtainable. One is able to get an idea of how much sought after these graduates are, when he learns that there are more than 20,000 machinists employed in the construction of high-class automobiles alone in the Department of the Seine, and many thousands in the construction of locomotives, not to speak of the great numbers engaged in the various other branches of the machine industry of the very highest class.

"For the various schools we appoint members of our organization to act as advisory and visiting members of boards of control; thus we are kept in touch with the school and its work, and are bound to keep the standard the very highest."

The general secretary of the Printing Trades of France said:

"I believe we may be justly proud of our schools of printing, and we have perfect confidence in the ability of the director. Personally, I have given much time to the students, and am ever ready to assist in the maintenance of the highest standard of excellence of equipment and instruction. You are aware, no doubt, that the seventeen trades comprising the printing industry have in France the foundation for the attainment of the highest intelligence. Thus our schools are called upon to supply the several trades with most efficient artisans; and that they do this we are bound to believe, for we are receiving the best wage and the shortest day of any craft in France.

"As you probably know, we have the best school of printing in existence to-day, with all the modern types of machines and every facility for instruction. There is no doubt that as artisans we compare favorably with those of any other country. We take great pride in assisting the apprentices from these schools both educationally and industrially."

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### SWITZERLAND

Switzerland has started a strategic movement by passing a law compelling every employer of labor who seeks to teach a trade, or accept boys or girls as apprentices, to allow them to attend during the day, at least four hours weekly, such schools as will advance or assist them in their chosen profession.

This law was passed in 1906 by a referendum vote of the people of the entire nation, but only after a very spirited special election, in which the law was favored by the wage workers and opposed by the employers. Of the 100,545 citizens entitled to vote, 71,933 took part in the election; and of these, 37,629 voted for the law and 28,110 against it.

The secretary of the Typographical Association said that the trades unions were all favorable to the establishment of industrial schools, though there were those who believed that some boys would learn more under a master than in the school.

To reach this position various circumstances have aided which are of general interest, and may serve to show how enthusiastic the Swiss trade unionists are in the matter of industrial training.

Recognizing the lack of a general system of industrial education, and knowing that they must have schools of their own if they were to compete with the technically educated French and German workmen, they forthwith established such schools and supported them out of their own funds; and so well did they perform their task that at present the printers, painters, shoemakers and tailors are receiving a cantonal subvention to assist in carrying on the schools.

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### IRISH TRADES UNION CONGRESS TECHNICAL TRAINING OF APPRENTICES

"This Congress of Irish workers declares that the time at the disposal of apprentices for acquiring a thorough technical knowledge of their respective trades is at present entirely inadequate, and urges upon employers the desirability of granting further opportunities, by allowing their apprentices a few hours' leave upon such days as they undertake to attend the technical schools, so as to enable them to become more proficient workmen; that the Department of Technical Instruction for Ireland be requested to press this matter upon local technical committees and employers' associations throughout the country."

### TECHNICAL EDUCATION, TRADES CLASSES

"That this Congress condemns the system that prevails in the technical schools of this country in accepting as pupils in the various trades classes and workshops persons who are not tradesmen or apprentices—to the detriment and injury of legitimate and qualified tradesmen; and that this Congress is of opinion that the teaching imparted in those trade classes and shops should be confined to tradesmen and apprentices, and calls upon the governors of the technical schools to see that only tradesmen or apprentices to the various trades receive tuition or be permitted to attend lectures in those trade classes and shops."

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## AT HOME

### ECONOMIC PROGRAM

Economic program adopted at the Minneapolis Convention of the American Federation of Labor in 1908:

The aims, desires and aspirations of the trade unionists comprise all that is necessary or possible to the well-being of the human family, and in the pursuit or accomplishment of which we cheerfully accept and, in fact, desire all the assistance which can be given our movement by all forces which stand for the betterment of mankind. \* \* \*

In furtherance of our claim, namely, that our principles comprise the fullest and highest scope of human activity, and from time to time will be enhanced and advanced in accordance with the demands to satisfy human needs and desires, we recommend the following as a partial statement at this time of the economic demands of the American Federation of Labor:

Free schools, free text-books, and compulsory education.

A thorough education of the workers in all lines of learning, including technology. \* \* \*

Delegate Russell, for the Committee on Education, presented the following:

NORFOLK, VA., November 20, 1907.

*To the Officers and Members of the Twenty-seventh Annual Convention of the American Federation of Labor:*

Your Committee on Education respectfully presents the following: Resolution No. 147—By Delegates John Golden and James Whitehurst, of the United Textile Workers of America, which is herewith subjoined, was referred to your committee for action thereon. The resolution follows:

"Whereas an organization has been formed known as a National Society for

the Promotion of Industrial Education, having for its object the raising of the standard of education along industrial lines; and

"Whereas some misapprehension exists in many quarters as to the attitude of organized labor upon this subject; be it, therefore,

*"Resolved*, That this, the Twenty-seventh Annual Convention of the American Federation of Labor, having in mind the experience of many of our national unions with the so-called 'trade school,' which attempted to teach a short cut to trade and which, on some occasions, was used as a weapon against the trade union movement, do not favor any movement having this ulterior object in view; and be it further

*"Resolved*, That we indorse any policy, or any society or association, having for its object the raising of the standard of industrial education and the teaching of the higher technique of our various industries."

The foregoing resolution was probably inspired by the address delivered by Mr. C. R. Richards, secretary of the National Society for the Promotion of Industrial Education, during the morning session of the second day of the present convention, a verbatim copy of which was furnished by the stenographer to your committee for its guidance, the same receiving careful consideration by the committee.

Mr. Charles H. Winslow, organized labor's representative on the Massachusetts Commission on Industrial Education, as well as Delegates Driscoll and Cohen, spoke before the committee on different phases of the subject.

Mr. Winslow, who twice addressed your committee, imparted valuable information as to the present status and future prospects of industrial education in his own and other States, giving also the results of his personal, first-hand studies of the industrial schools of Europe.

After an exhaustive, impartial discussion, your committee decided to record itself in favor of the best opportunities for the most complete industrial and technical education obtainable for prospective applicants for admission into the skilled crafts of this country, particularly as regards the full possibilities of such crafts, to the end that such applicants be fitted not only for all usual requirements, but also for the highest supervisory duties, responsibilities and rewards; and your committee recommends that the Executive Council give this subject its early and deep consideration, examining established and proposed industrial school systems, so that it may be in a position to inform the American Federation of Labor what, in the Council's opinion, would be the wisest course for organized labor to pursue in connection therewith.

A motion was made and seconded that the report of the committee be concurred in.

The question was discussed by Delegates Driscoll and Golden.

The motion to concur in the report of the committee was carried.

#### EXTRACT FROM REPORT OF PROCEEDINGS, A. F. OF L.

Extract from Report of Proceedings of the Twenty-eighth Annual Convention of the American Federation of Labor, held at Denver, November 9-21, 1908:

The committee reported as follows on that portion of the report of the Executive Council under the caption of "Industrial Education:"

#### INDUSTRIAL EDUCATION

We note with satisfaction the splendid progress accomplished by the Executive Council along the lines of industrial education, carrying out the instruction of the Norfolk convention. Much data and material have been brought to hand and referred to your committee. But your committee feels that in no sense, with the limited time allotted them, can they make a complete report on the value of the mass of material referred to them on this subject, and we can best submit our recommendations in the following resolution:

"Whereas industrial education is necessary and inevitable for the progress of an industrial people; and

"Whereas there are two groups with opposite methods, and seeking antagonistic ends, now advocating industrial education in the United States; and

"Whereas one of these groups is largely composed of the non-union employers of the country, who advance industrial education as a special privilege under con-

ditions that educate the student or apprentice to non-union sympathies and prepare him as a skilled worker for scab labor and strike-breaking purposes, thus using the children of the workers against the interests of their organized fathers and brothers in the various crafts; and

"Whereas this group also favors the training of the student or apprentice for skill in only one industrial process, thus making the graduate a skilled worker in only a very limited sense and rendering him entirely helpless if lack of employment comes in his single subdivision of a craft; and

"Whereas the other group is composed of great educators, enlightened representatives of organized labor and persons engaged in genuine social service, who advocate industrial education as a common right to be open to all children on equal terms to be provided by general taxation and kept under the control of the whole people with a method or system of education that will make the apprentice or graduate a skilled craftsman in all the branches of his trade; and

"Whereas organized labor has the largest personal and the highest public interest in the subject of industrial education, and should enlist its ablest and best men in behalf of the best system, under conditions that will promote the interests of the workers and the general welfare; now therefore, be it

*Resolved*, That the President, in conjunction with the Executive Council of the American Federation of Labor, be, and is hereby, authorized to appoint a special committee of at least fifteen, to be composed of a majority of trade union members of this convention, who will serve without compensation and incur no expenses other than necessary and legitimate expenditure within the judgment of the President and Executive Council, to investigate the methods and means of industrial education in this country and abroad, and to report its findings, conclusions and recommendations to the next annual meeting of the American Federation of Labor."

A motion was made and seconded that the recommendation of the committee be adopted.

### SUPPLEMENTAL TRADE EDUCATION

The Hot Springs convention of the I. T. U. adopted the following resolutions:

"Whereas it is becoming more apparent, year after year, that the apprentices in printing offices are being restricted in opportunities to learn the trade in its principal branches, thereby minimizing their value as journeymen, and realizing the tendencies of foremen, as a rule, to make specialists of the apprentices; therefore, be it

*Resolved*, That the Executive Council of the International Typographical Union is hereby instructed to appoint a commission of three, whose duty it shall be to formulate some system for the technical education of our members and apprentices, and that this commission be not restricted in its efforts in this direction; and, further

*Resolved*, That the Executive Council is hereby authorized to expend such sum of money as in its judgment may be deemed necessary to defray the expense of said commission.

*Resolved*, That said commission report the result of its work to the next convention of the International Typographical Union."

The commission decided upon a correspondence course, and in doing so determined that the lessons should be sufficiently comprehensive to embrace subjects that can not now be learned in printing offices. That is, the student should be taught the principles of the printing art in such a way as would enable him to master the principles pertaining to harmonious color and type arrangement. This will widen the field for printed matter, creating a demand for labor, and assist printers who desire to take up designing or the development of advertising ideas.

In order that the tutors should be of the best, the union has made arrangements to assume control of the experts attached to the Inland Printer Technical School. There is no cavil as to the excellence of this institution; under union auspices it has in the last few years graduated more than one thousand machine operators, and the thoroughness and completeness of its instruction in this and other branches, as well as its success, have won the unstinted praise of trade educators.



## ELECTROTYPERS AND STEREOTYPERS

Executive Board recommendations adopted by the Convention, 1908:

In line with the tendency of the day and for the purpose of more nearly accomplishing those ends for which trades unions are organized, i. e., make highly skilled, competent mechanics, that they may thereby raise the standard of living, it is deemed by the Executive Board a favorable time to call to the attention of the convention the question of technical education in our crafts.

No one who wishes to be informed relative to the trade union movement can ignore the agitation for industrial trade schools and other means of educating the youth in a thorough knowledge of some craft or calling.

The evolution in industry has so specialized the work of all trades that apprentices no longer are able to obtain that general knowledge and understanding of their work which creates initiative or interest in it. Every one knows that toil loses much of its wearisomeness if an interest in the work can be aroused in the one performing it. If one is not acquainted with the reasons for a thing and the relative merits of several processes of doing it his interest is not stimulated to any appreciable extent.

If the trade unions do not rise equal to the needs of the day and by some method train their members thoroughly in the theoretical and technical parts of the crafts some other interests less friendly to the workers will surely give this instruction, for no American can believe that the workers of this continent will ever be permitted to fall below the best standard existing in the world.

These reflections have caused the Executive Board to recommend as a first step that each local union appoint a committee of its best informed artisans to study this subject and train and instruct the apprentices within its jurisdiction and report the results to the next convention for its consideration.

Out of these experiments will come a practical, effective and natural system wherefrom each apprentice will be developed into a thorough technician and mechanic, to the honor and strength of our craft organization.

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## INTERNATIONAL PHOTO-ENGRAVERS OF NORTH AMERICA

The action of the International Photo-Engravers Union of North America, at its Milwaukee convention, September 7-11, 1909, authorizes the Executive Council to submit a practical plan of technical education or trade training to our membership during the coming year. The matter of establishing a system whereby our members might participate in the benefits accruing from a course of technical training has occupied the favorable attention of three of our recent conventions. We hope to see such a system put into effect the coming year.

LOUIS SCHWARZ, *Secretary*.

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## PRINTING PRESSMEN AND ASSISTANTS UNION

\*The International Printing Pressmen and Assistants Union of North America adopted the following in 1909:

That the president be instructed to appoint a committee of five, representing the different classes of our business, for the purpose of taking the question of technical education up and devising some plan whereby this work can be inaugurated on a basis of practicability. If after a careful study of this question the committee is of the opinion that the work can not be carried on without expense to the International Union, their plan in concrete form shall be referred to the referendum. We further recommend that the board of directors act in conjunction with the committee appointed by the president.

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## OPERATIVE PLASTERERS

Proceedings of International Convention of Operative Plasterers International Association of 1908:

The committee reported that it was in hearty accord with the trade schor'

when run and controlled by the O. P. I. A. for the advancement of our members and apprentices.

The committee quoted as follows from the president's report:

"No doubt the trade school, if properly conducted, would do great good. I feel it is a waste of energy to teach boys a trade who never intend to follow it. The trade school, to be successful, must have the co-operation of the journeyman to insure its success. Without this co-operation they are failures. Were trade schools confined to advancing the apprentices who are regularly employed by the various employers they would no doubt be filling a long felt want and directing their labors in the right channel. Each and every boy who starts to learn a trade with an employer has a desire to become a thorough mechanic. But it must be acknowledged that few of them receive the opportunity, as a great number of our employers are not in a position to teach a boy a trade properly. It is in cases of this kind that the trade school would prove advantageous, as the boys could attend the school in the evenings and be taught the scientific principles involved in the trade, the nature of materials, etc. A practical mechanic should be employed to teach the boys in ornamental work. I feel that a trade school conducted along these lines should be encouraged, and trade unions should even contribute to their support."

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### INTERNATIONAL GRANITE CUTTERS

This association is in favor of public industrial education, and encourages technical education of its members and apprentices, including drawing, modeling and the teaching of English.

JAMES DUNCAN, *Secretary-Treasurer.*

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### UNITED TEXTILE WORKERS OF AMERICA

This organization has for many years endorsed the textile schools that are under the joint control of the State and municipality, and furthermore endorse all forms of industrial education properly safeguarded as above.

JOHN GOLDEN, *President U. T. W. of A.*

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### INTERNATIONAL HORSE SHOERS UNION

This organization is on record for the past fifteen years as endorsing the technical training of its members, and has advocated and obtained legislation, both Federal and State, looking toward the technical education of its members.

ROADY KENEHAN, *Secretary-Treasurer.*

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### INTERNATIONAL MOLDERS UNION

Whereas believing that the best interests of our craft lie in promoting the education of apprentices and in inducing them to acquire a thorough technical knowledge of their trade, including a knowledge of mechanical drawing; therefore, be it

*Resolved*, That we hereby recommend all local unions to take such steps, wherever practicable, as will enable the apprentice to take a course in this study, and, as a further inducement, to pay a reasonable tuition fee for him, where such tuition can not be obtained free.

*Resolved*, That we approve of the system of placing apprentices to work among the journeymen molders in preference to that of placing them together under an instructor.

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### BOOT AND SHOE WORKERS UNION

Resolution adopted by the convention, June, 1909:

That a committee be appointed to thoroughly investigate the question of trade schools and publish their report in the Journal. A committee of three was appointed and is now undertaking the investigation.

### **PATTERN MAKERS LEAGUE OF NORTH AMERICA**

The Pattern Makers League of North adopted the following at the 1909 convention:

All apprentices to the trade of pattern making shall be at least sixteen (16) years of age.

During such apprenticeship he shall attend a school teaching technical courses such as will fit him to become a practical and competent journeyman (such schools to be approved by the association). The apprentice must graduate in such studies before the expiration of the apprenticeship in order to be recognized as a journeyman.

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### **CARPENTERS' APPRENTICES**

Apprentice rules adopted by the Joint Arbitration Board of the Carpenters and Builders' Association and the Carpenters' Executive Council of Chicago and Cook County:

The contractor taking an apprentice shall engage to keep him at work in the trade for nine consecutive months in each year, and see that during the remaining three months of the year the apprentice attends school during January, February, and March, and a certificate of attendance from the principal of the school attended will be accepted by the joint arbitration board as a compliance with this requirement, before he is allowed to work during the coming year.

A contractor taking an apprentice shall keep him steadily at work or school; failing to do so, he shall pay him the same as though he had worked for him.

In case an apprentice at the end of his term of four years, for want of proper instruction in his trade, is not a proficient workman, and if, after a thorough investigation the joint arbitration board finds that the contractor to whom he was apprenticed did not give him proper instruction and an opportunity to learn his trade, he may be required to serve another year, with whom he and the joint arbitration board may determine, and at a rate of wages (less than the minimum) in his trade they may determine, and the difference between said rate and the minimum scale in his trade shall be paid through the joint arbitration board.

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### **JOURNEYMEN TAILORS UNION**

From report of General Secretary John B. Lennon, to the Convention of the Journeymen Tailors Union of America, held at Buffalo, N. Y., August, 1909. Approved by Convention:

To all the people, and especially to those who are engaged in mechanical occupations, the subject of industrial education, which is now so strongly before the student world and the economists, is a question of first importance. The old time method of apprenticeship in all the crafts has disappeared or very nearly so and there is apparently no possibility of its being resurrected. The world moves too fast nowadays to warrant the spending of from four to ten years to learn a trade. We are as much interested in this subject as any other craft, perhaps more. There are a few apprentices or helpers that are learning our trade in any part of the world. And if the trade is to be perpetuated, proficiency in it will have to be learned by some other method than that of apprenticeship. And it seems to me that the only feasible system is that which is known as industrial education. The craftsmen of the world have looked upon this innovation with great disfavor and have exerted a very considerable influence against its introduction to any extent. But the time is near at hand when successful opposition will be absolutely impossible. And it appears to me that the trade union movement should become a positive and aggressive factor upon this subject of industrial education, insisting that it be practical, that it turn out high class mechanics, not only with their brain developed, but with their fingers as well. We need have no fear of industrial education if intelligent high class mechanics are produced. A tailor needs to know the philosophy of his trade and the history of it. He needs to have a business education, and if that can be had at the same time that he is securing his mechanical education, it certainly will be an advantage to the tailors of the future, and what it seems to me we should stand for is that industrial education in our school system in some way, shape, or manner shall be practically effective

so as not to be a weapon to pull down the working class, but should be a means of upbuilding because of the high grade of people turned out.

### INTERNATIONAL ASSOCIATION OF MACHINISTS

Taken from International President's report, International Association of Machinists Convention, September, 1909:

As no two children are alike in constitution or temperament, education becomes an individual task. What might suit one might not suit another. A curriculum that would be adequate and desirable in one instance might be entirely out of place in many others, which gives rise to a great diversity of opinion as to the best means to be employed for the proper education of the rising generation.

Any plan that would propose a complete education by extraneous means is doomed to failure because of the vast difference that exists between individual children. Ability and inclination are important factors. Remembering this, parents and tutors must exercise great care and discrimination in working out the task of forming a citizen. After the schools have done all that is possible in a preliminary way, the real work begins to properly qualify and equip the coming citizen with all that is necessary to enable him to earn a living and shoulder the social responsibilities that come with mature manhood. There must be no short cut to this, or any royal road that would pretend to give this power without training and the hard work it entails. We prize most those things for which we work most and for which we sacrifice most.

Industrial schools and kindred establishments making claims of ability to instruct the rising generation in all the details necessary to fully equip a practical machinist so that he can hold his own and command the average pay of a journeyman in less time and with less practice than it is done in the machine shop are claiming more than can be accomplished. In theory, their claims may work out most satisfactorily, but when it comes to a practical test they are of no greater value than any other dilettante's dream.

The workshop is the only place where an education can be gained that is practical and thorough, calculated to fill all the requirements that go to make up a full-fledged mechanic. The industrial school merely supplies a veneer of education which can never compete with the solid practicability of the education acquired in the factory. Its well-rounded thoroughness comes from observation, from intuition, from absorption and the all-round hard work that comes with every-day application. It can never be acquired elsewhere nor gained in any other way than in the hard school of factory experience. The factory workshop can be depended upon for practical results in the matter of supplying fully equipped mechanics, which can never be expected from the industrial school as long as it is depended upon for it by itself alone.

Industrial education is one of the live, burning questions of the day. Schools are being rapidly established in many parts of the country and large sums of money raised through public and private sources to encourage, maintain and foster the same.

The trade union movement is intensely interested, because it strikes at the very foundation of that movement. It means the life of the apprenticeship system, as established by trades organizations, if allowed to run wild, as is the case at the present time.

The machinist trade has been singled out by industrial schools, and every school established to date has attempted to teach our trade to boys during periods ranging from six months to two years.

The following resolution was adopted by the convention:

"Whereas the report of the International President calls attention to the threatened danger to our apprenticeship system by the trade schools of the country, which issue certificates to students as graduates in the several trades; and

"Whereas such so-called graduates of trade schools are frequently used by employers to prevent men gaining a higher wage rate or shorter hours; therefore, be it

*"Resolved,* That the attention of our membership be called to this growing evil, and urged to refuse to assist such so-called machinists who may be engaged as 'improvers' or 'men under instructions' in acquiring a more enlarged knowledge of the business."

## RESULTS OF A RECENT INVESTIGATION BY THE DEPARTMENT OF LABOR OF NEW YORK STATE

The replies of secretaries of the labor unions of the State to the question: "Do you favor a public industrial or preparatory trade school, which should endeavor to reach boys and girls between 14 and 16, that now leave the common school in very large numbers before graduation? Such a school would not teach a trade, but would give a wide acquaintance with materials and fundamental industrial processes, together with drawing and shop mathematics, with the object of giving a better preparation for entering the industries at 16 and better opportunities for subsequent advancement," are as follows:

Groups of Trades	No. answering—		Qualified—		Not answering	Total Unions
	Yes	No	Yes	No		
Building, stone work, etc.....	456	148	8	1	130	743
Transportation.....	265	23	2	.....	88	378
Clothing and textiles.....	117	23	2	1	81	174
Metals, machinery, shipbuilding.....	165	49	5	.....	69	288
Printing, binding, etc.....	56	26	2	2	29	115
Wood working and furniture.....	52	15	.....	.....	21	88
Food and liquors.....	67	11	.....	.....	38	116
Theaters and music.....	31	4	.....	1	27	63
Tobacco.....	34	12	3	.....	16	65
Restaurants, trade, etc.....	88	22	1	.....	24	135
Public employment.....	77	.....	.....	.....	48	125
Stationary engine men.....	44	7	.....	.....	18	69
Miscellaneous.....	48	9	.....	.....	35	92
Total.....	1,500	349	23	5	574	2,451

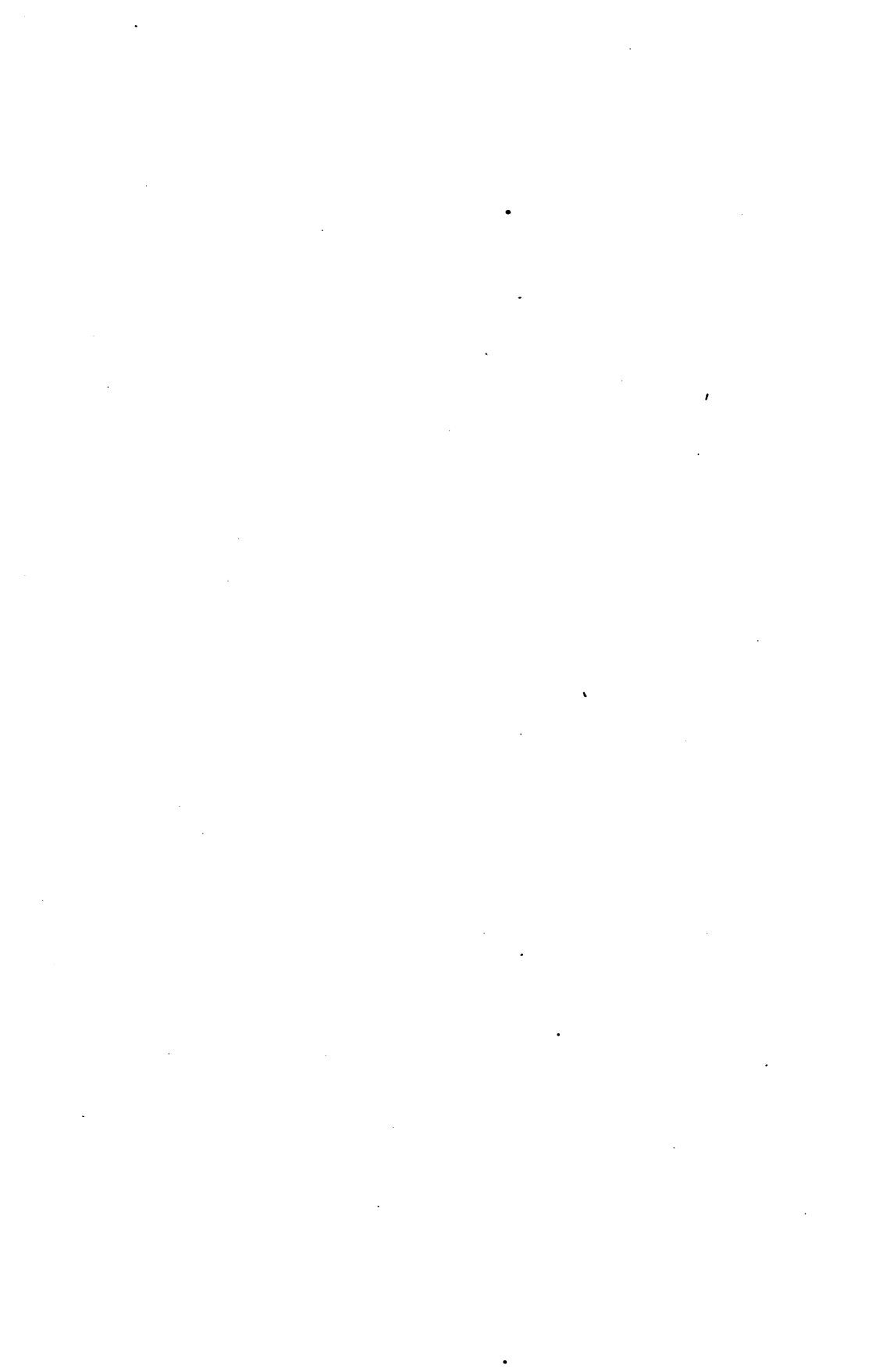
The returns from labor union officers in answer to the question: "Do you favor public trade schools for boys and girls between 16 and 18, that would give two years of practical training, together with drawing and mathematics, provided the graduates of such schools should serve two years more as apprentices or improvers?" as given below will undoubtedly prove of much interest:

Groups of Trades	No. answering—		Qualified—		Not answering	Total Unions
	Yes	No	Yes	No		
Building, stone working, etc.....	348	238	32	1	124	743
Transportation.....	233	44	6	.....	95	378
Clothing and textiles.....	107	32	4	.....	81	174
Metals, machinery, shipbuilding.....	109	96	15	1	67	288
Printing, binding, etc.....	33	41	5	4	32	115
Wood working and furniture.....	43	21	1	1	22	88
Food and liquors.....	62	17	1	.....	36	116
Theaters and music.....	33	1	.....	.....	29	63
Tobacco.....	26	21	3	.....	15	65
Restaurants, trade, etc.....	78	31	1	.....	25	135
Public employment.....	75	4	1	.....	45	125
Stationary engine men.....	42	9	2	.....	16	69
Miscellaneous.....	43	12	.....	.....	37	92
Total.....	1,232	567	71	7	574	2,451

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